

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII

901 N. 5<sup>TH</sup> STREET

KANSAS CITY, KANSAS 66101

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ENVIRONMENTAL PROTECTION  
AGENCY-REGION VII  
REGIONAL HEARING CLERK

IN THE MATTER OF:

LEADWOOD MINE TAILINGS SITE

County, State of the Missouri

The Doe Run Resources Corporation

Respondent,

Proceeding under Section 106(a) of the  
Comprehensive Environmental Response,  
Compensation, and Liability Act of 1980,  
42 U.S.C. § 9606 (a).

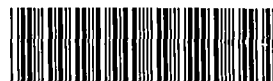
UNILATERAL  
ADMINISTRATIVE ORDER

Docket No. CERCLA-07-2006-0272

UNILATERAL ADMINISTRATIVE ORDER  
FOR NON-TIME CRITICAL REMOVAL ACTION

Site	LEADWOOD MINE
ID #	ND985818210
Break:	10.1
Other:	
07WF	9/29/06

40260757



SUPERFUND RECORDS

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### **I. JURISDICTION AND GENERAL PROVISIONS**

1. This Unilateral Administrative Order (Order) is issued pursuant to the authority vested in the President of the United States by Section 106(a) of the Comprehensive Environmental

Response, Compensation, and Liability Act of 1980, 42 U.S.C. § 9606(a), as amended (CERCLA), and delegated to the Administrators by Environmental Protection Agency (EPA) Delegation Nos. 14-14-A and 14-14-B. This authority has been delegated to the EPA, Region VII Superfund Division Director by R07-14-014-A and R07-14-014B.

2. This Order pertains to the Leadwood Mine Tailings Site, formerly used for mining, milling, roasting and smelting activities, located South of Highway 8 between the towns of Leadwood, Frank Clay, and Wortham in St. Francois County, Missouri (the Site). This Order requires the Doe Run Resources Corporation (Respondent) to conduct removal actions described herein to abate an imminent and substantial endangerment to the public health, welfare, or the environment that is presented by the actual or threatened release of hazardous substances at or from the Site.

3. The EPA notified the State of Missouri of this action pursuant to Section 106 (a) of CERCLA, 42 U.S.C. § 9606(a).

## **II. PARTIES BOUND**

4. This Order applies to and is binding upon Respondent and Respondent's heirs, directors, officers, employees, agents, receivers, trustees, successors and assigns. Any change in ownership or corporate status of Respondent including but not limited to any transfer of assets or real or personal property shall in no way alter Respondent's responsibilities under this Order.

5. Respondent shall ensure that its contractors, subcontractors, and representatives receive a copy of this Order. Respondent shall be responsible for any noncompliance with this Order.

## **III. DEFINITIONS**

6. Unless otherwise expressly provided herein, terms used in this Order that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in the statute or in its implementing regulations. Whenever terms listed below are used in this Order or in the documents attached to this Order or incorporated by reference into this Order, the following definitions shall apply:

a. "Action Memorandum" shall mean the EPA Action Memorandum for the Leadwood Mine Tailings Site, signed on June 22, 2006, by the Superfund Division Director, EPA, Region VII, and all appendices thereto. The Action Memorandum is enclosed as Appendix B.

b. "CERCLA" shall mean the Comprehensive Environmental Response, Compensations, and Liability Act of 1980, as amended 42 U.S.C. §9601, *et seq.*

c. "Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or a federal holiday. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the close of business of the next working day.

d. "Effective Date" shall be the effective date of this Order as provided in Section XVIII.

e. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

f. "MDNR" shall mean the Missouri Department of Natural Resources and any successor departments or agencies of the State.

g. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

h. "Order" shall mean this Unilateral Administrative Order and all appendices attached hereto. In the event of conflict between this Order and any provision of any other agreement, order, appendix, or writing, the terms and conditions of this Order shall control.

i. "Paragraph" shall mean a portion of this Order identified by an Arabic numeral.

j. "Parties" shall mean the EPA and the Respondent.

k. "Respondent" shall mean the Doe Run Resources Corporation.

l. "Section" shall mean a portion of this Order identified by a Roman numeral.

m. "Site" shall mean the Leadwood Mine Tailings Site, consisting of a large chat pile, mill facility remnants, mine shaft remnants, two tailings dams and area including but not limited to adjacent areas, covered by chat or tailings, and depicted generally on the map attached as Figure One to Appendix A (SOW). The definition of "Site" shall have the same meaning as "facility" in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9), and for purposes of this Order, shall reference the locations where hazardous substances have come to be located as a result of

mining and milling activities at the Site or as a result of any migration of hazardous substances off the Site.

n. "State" shall mean the State of Missouri.

o. "Statement of Work (SOW) or "Scope of Work (SOW)" shall mean the statement of work for implementation of the Removal Action at the Leadwood Mine Tailings Site, as set forth in Appendix A to this Order, and any modifications made thereto in accordance with this Order. The SOW is incorporated into this Order and is an enforceable part of this Order.

p. "United States" shall mean the United States of America.

q. "Waste Material" shall mean any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); and any "hazardous waste" under State and Federal Law.

r. "Work" shall mean all activities Respondent is required to perform under this Order.

#### **IV. FINDINGS OF FACT**

7. Respondent is a New York Corporation registered to do business in the State of Missouri.

8. The majority of the Site is currently owned by The Doe Run Resources Corporation (Doe Run), as the corporate successor to St. Joe Minerals Corporation.

9. The Leadwood Mine Tailings Site is located in St. Francois County, in the southeastern region of the State of Missouri. It is part of what is commonly known as the Old Lead Belt, which was the largest lead-producing region in the United States from 1907 to 1953.

10. Mining operations began at and near the Site in approximately 1894 and continued until the mill at the Site was permanently closed around 1965. The by-product of the mining process resulted in the production of mine waste materials called chat and tailings. Much of the mining waste remains at the site today.

11. Substances of concern at the Site are residual heavy metals, primary lead, cadmium, and zinc, disposed of on-site. Ore metals were separated from the host rock as completely as possible during milling operations, however, relatively small quantities were disposed with the

chat and tailings. Over the century of waste generation, many tons of heavy metals have accumulated in the tailings and chat piles.

12. The Site consists of a large chat pile, mill facility remnants, mine shaft remnants, two tailings dams and areas including but not limited to adjacent areas, covered by chat or tailings. The Site is highly accessible and is frequently used by the public for recreation.

13. The chat pile at the Site covers approximately thirty-five (35) acres. Barren tailings cover approximately two-hundred twenty-eight (228) acres at the Site and an additional three hundred (300) acres at the Site are covered with sparsely or partially vegetated tailings. The depth of the mine tailings at the Site varies and their volume is estimated to be 5,100,000 cubic yards.

14. "Chat" is a waste product of the density separation lead extraction process. This method consisted of grinding the ore and allowing the lead to be separated by gravity. The waste from this process was dry and conveyed to a pile. Chat consists of larger gram-sized particles.

15. "Tailings" are medium to fine sand-sized particles that were generated as a result of the froth flotation lead extraction process. The tailings are generally of much finer consistency than the chat and are spread across the land surface in fields rather than in piles.

16. The fine-grained sediments comprising the tailings are particularly susceptible to erosion by wind and surface water runoff. During summer months, airborne transport of sediments from the tailings field is often visible.

17. Residential areas are located within close proximity to the Site. During periods of high wind, off-Site releases of heavy metals occur via wind-blown tailings. Nearby residential soil sampling indicates elevated lead, cadmium, and zinc levels. Approximately 1,165 people live in the towns adjacent to the Site. Accessibility to the Site is high, and the Site is frequented by off-road vehicles.

18. Samples of tailings collected during the EPA Site Screening Inspection (SSI) in May of 1994 measured lead at concentrations ranging from 637 to 3,990 ppm; cadmium ranging from 12.5 to 97.5 ppm; and zinc ranging from 655 to 8,260 ppm.

19. Surface runoff from the Site discharges into Eaton Creek which eventually flows into the Big River.

20. Samples of the Leadwood Tailings Pile taken in 1983 as part of The University of Missouri-Rolla study identified elevated metal values in Big River and at the confluence of Eaton

Creek and Big River. From this information the Study concluded that the Leadwood pile contributes materials to the Big River via Eaton Creek.

21. Surface water samples taken from Eaton Creek in 2003 as part of the development of the EE/CA revealed elevated levels of lead, zinc, and cadmium. These elevated levels exceeded surface water criteria for protection of aquatic life for total lead, zinc, and cadmium.

22. Sediment samples were taken by EPA in 2005 from the Big River at upstream and downstream locations of the Leadwood Tailings Pile. Samples taken upstream of the Leadwood Tailings Pile revealed maximum upstream sediment concentrations of lead, zinc, and cadmium were measured at 19.1 ppm, 83 ppm, and 0.3 ppm respectively. In comparison, samples taken downstream of the Leadwood Tailings Pile revealed maximum downstream sediment concentrations of lead, zinc, and cadmium which measured 26,600 ppm; 9,300 ppm; and 227 ppm respectively. The current McDonald's Sediment Quality Guideline for lead, zinc, and cadmium are 35.8 ppm, 121 ppm, and 0.99 ppm respectively.

23. The Doe Run Resources Corporation has been sampling and replacing lead-contaminated residential surface soils near the mine tailings sites in St. Francois County since 2001. There are approximately one hundred five (105) residential yards located within 1.4 miles of the Site which have been confirmed to have lead in surface soil at concentrations exceeding 400 ppm.

24. Residents of the area around the Site, including children, may face actual and/or potential exposure to lead, cadmium, and zinc from the mine waste via ingestion, skin contact, and inhalation.

25. Exposure to cadmium can increase the risks of future adverse health effects such as cancer in animals and humans, tetragenicity, reproductive toxicity, and kidney disorders in humans. Breathing air with very high levels of cadmium severely damages lungs and can cause death. Breathing lower concentrations of cadmium over a period of years can cause kidney disease, lung damage, and fragile bones. Ingestion of high concentrations of cadmium causes vomiting and diarrhea.

26. Exposure to zinc can increase the risk of acute toxicity in freshwater organisms. Oral ingestion of zinc may cause anemia in humans.

27. Human exposure to lead can increase the risk of future adverse health effects. Lead is a metal and a constituent of D008 hazardous waste (40 C.F.R. §261.24). Lead is classified by EPA as a probable human carcinogen and is a cumulative toxicant. The early effects of lead poisoning are nonspecific and difficult to distinguish from the symptoms of minor seasonal illnesses. Lead poisoning causes decreased physical fitness, fatigue, sleep disturbance, headache,

aching bones and muscles, digestive symptom (particularly constipation), abdominal cramping, nausea, vomiting, and decreased appetite. With increased exposure, symptoms include anemia, pallor, a "lead line" on the gums, and decreased handgrip strength. Alcohol and physical exertion may precipitate these symptoms. The radial nerve is affected most severely causing convulsions, coma, delirium, and possibly death. The kidneys can also be damaged after long periods of exposure to lead, with loss of kidney function and progressive azotemia. Lead exposure is associated with increases in blood pressure and left ventricular hypertrophy. A significant amount of lead that enters the body is stored in the bones for many years and can be considered an irreversible health effect.

28. Young children are particularly susceptible to adverse health effects due to exposure to lead. Low levels of lead exposure may harm a child's brain and central nervous system. Exposure to lead could cause irreversible damage to children such as impaired growth development, lower IQ levels, behavioral problems, and hearing loss. Very high levels of lead exposure may cause coma, convulsions or even death in children. Some symptoms of high lead levels in children include poor appetite, stomachaches, vomiting, constipation, crankiness, loss of energy, headaches, and trouble sleeping. These symptoms are often mistaken for other illnesses and many children have no symptoms even though a screening test indicates a lead problem.

29. In May 1997, the Missouri Department of Health (MDOH) released a draft Lead Exposure Study of children in the Old Lead Belt. The MDOH Study included sampling children's blood, sampling environmental media such as soil and dust, and questioning residents about their lifestyles as it related to lead exposure. The MDOH Study compared the information in the Old Lead Belt of St. Francois County to information collected during a study on a control area, Salem, Missouri, located outside the area of concern. This Study showed that about 17% of the children tested in the Old Lead Belt showed a blood lead level of more than 10 micrograms/deciliter whereas only about 3% of the children in Salem were elevated.

30. According to the U.S. Centers for Disease Control and Prevention (CDC), a blood lead concentration of 10  $\mu$ g/dl presents a health concern. In the MDOH Study, approximately 17% of the children tested in the Old Lead Belt showed blood levels over 10  $\mu$ g/dl whereas only approximately 3% of the children in Salem had elevated blood levels. The Missouri Department of Health and Senior Services reported that the July 2003 through June 2004 blood level testing data showed that 5% of the children tested in St. Francois County showed blood levels over 10  $\mu$ g/dl.

31. Beginning in November 2005, EPA conducted a bioavailability analysis of lead from a composite sample taken from five tailings piles located in St. Francois County, Missouri. One of the five piles where a sample was collected was the Leadwood Mine Tailings Pile. The bioavailability analysis concluded that the point estimate, relative bioavailability (RBA) of the composite tailings sample was 40 percent.



32. On June 9, 2000, The Doe Run Resources Corporation entered into an Administrative Order on Consent (AOC) with EPA for an Engineering Evaluation/Cost Analysis (EE/CA) to identify and evaluate alternatives for a removal action to prevent, mitigate, or otherwise respond to or remedy the release or threatened release of hazardous substances, pollutants or contaminants from the Site.

33. The September 9, 2005 EE/CA, was approved by EPA and issued for public comment on February 28, 2006. A public meeting was held on February 28, 2006, in Leadwood, Missouri.

34. On June 22, 2006, following the close of the public comment period and consideration of all comments, EPA issued an Action Memorandum (attached as Appendix B) which selected the removal action to be implemented for the Site.

35. The EPA maintains an administrative record for the Site and it is available at the locations listed in Section XIII.

36. This Site is not currently on the National Priorities List and has not been proposed for listing.

#### **V. CONCLUSIONS OF LAW AND DETERMINATIONS**

37. Based on the Findings of Fact set forth above, and the Administrative Record supporting this removal action, EPA has determined that:

a. The Leadwood Mine Tailings Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

b. The contamination found at the Site, as identified in the Findings of Fact above, includes "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

c. The Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

d. The Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), as a person who is a current owner or operator of the chat pile portion of the Site, or as a person who at the time of disposal of any hazardous substances owned or operated any facility at which such hazardous substances were disposed. The Respondent is liable for the performance of response actions and for response costs incurred and to be incurred at the Site.

e. The presence of hazardous substances at the Site or the past, present, or potential migration of hazardous substances currently located at or emanating from the Site constitutes an actual or threatened "release" of hazardous substances from the facility as defined by Section 101(22), 42 U.S.C. § 9601(22).

f. The lead contamination identified in soils and mining waste at the Site and in adjacent residential properties, as further described in the Findings of Fact above, constitutes an imminent and substantial endangerment to public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a). The EPA considered the factors set forth in Section 300.415(b)(2) of the NCP when determining the appropriateness of a removal action at the Site. The NCP factors include but are not limited to the actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants; the presence of high levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate; as well as weather conditions that may cause the hazardous substances to migrate or be released from the Site.

g. At least six (6) months planning existed at this Site and the removal action required by this Order is necessary to protect the public health, welfare, or the environment and, if carried out in compliance with the terms of this Order, will not be inconsistent with the NCP or CERCLA.

## **VI. ORDER**

38. Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for this Site, EPA hereby orders that Respondents comply with all provisions of this Order including but not limited to all attachments to this Order; all documents incorporated by reference into this Order; and all schedules and deadlines in this Order, attached to this Order or incorporated by reference into this Order, and perform the following actions:

### **A. Notice of Intent to Comply**

39. Respondent shall notify EPA in writing within fourteen (14) days of the Effective Date of this Order of Respondents' irrevocable intent to comply with this Order. Failure of Respondent to provide such notification within this time period shall be a violation of this Order by Respondents.

B. Designation of Contractor, Project Coordinators

40. Respondent shall perform the removal action themselves or retain one or more contractors to perform the removal action. Should Respondent elect to conduct the removal action themselves, they shall notify EPA of their qualifications to perform the work within twenty-one (21) days of the Effective Date of this Order. Should Respondent retain a contractor to conduct the removal action, Respondent shall notify EPA of the name and qualifications of each contractor within twenty-one (21) days of the Effective Date. Respondent shall also notify EPA of the name and qualifications of any other contractor or subcontractor retained to conduct the removal action under this Order at least two (2) days prior to commencement of such removal action. The EPA retains the right to disapprove of any party Respondent selects to conduct the removal action. If EPA disapproves of Respondent's selection, Respondent shall propose a different party to perform the work and shall notify EPA of the name and qualifications of that party within two (2) working days of EPA's disapproval.

41. Within twenty-one (21) days after the Effective Date, Respondent shall designate a Project Coordinator who shall be responsible for administration of all actions by Respondent which are required by this Order. Respondent shall submit to EPA the designated Project Coordinator's name, address, telephone number, and qualifications. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site work. The EPA retains the right to disapprove of any Project Coordinator named by Respondent. If EPA disapproves of a selected Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number, and qualifications within two (2) working days following EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from EPA relating to this Order shall constitute receipt by Respondent.

42. The EPA has designated Bruce Morrison as its Project Coordinator. Respondent shall direct all submissions required by this Order by certified or registered mail to Mr. Morrison at the United States Environmental Protection Agency, Region VII, 901 North Fifth Street, Kansas City, Kansas 66101, or at (913) 551-7755.

C. Work to be Performed

43. Respondent shall perform, at a minimum, all actions necessary to implement the Statement of Work (Appendix A), Action Memorandum (Appendix B), and Recommended Alternative's 3, 4.1, 4.2, 4.3A and 4.4 from the September 2005 Engineering Evaluation/Cost Analysis Report (EE/CA Alternative's 3, 4.1, 4.2, 4.3A and 4.4) (Appendix C). Respondent shall also perform all actions necessary to implement institutional controls to restrict future uses and activities on the Site.

44. Removal Action Work Plan. Within sixty (60) days of the Effective Date of this Order, Respondent shall prepare and submit to EPA for review and approval a Removal Action Work Plan that presents the plans and specifications for the removal action to be conducted at the Site and describes the proposed tasks and schedules associated with implementation of the removal action. The schedule shall provide for completion of grading, basin construction, rock cover, soil cover, and initial vegetative seeding within two (2) years of EPA's approval of the Work Plan. The Work Plan shall conform to the requirements of the attached SOW, Action Memorandum, and EE/CA Alternative's 3, 4.1, 4.2, 4.3A and 4.4. In the event that there is any conflict between the language of this Order, the SOW, the Action Memorandum, and EE/CA Alternative's 3, 4.1, 4.2, 4.3A and 4.4, this Order shall ultimately control. The SOW shall control over both the Action Memorandum and the EE/CA Alternative's 3, 4.1, 4.2, 4.3A and 4.4, and the Action Memorandum shall control over the EE/CA Alternative 3, 4.1, 4.2, 4.3A and 4.4.

EPA may approve, disapprove, require revisions to, or modify the Work Plan in whole or in part. If EPA requires revisions, Respondent shall submit a revised Work Plan within thirty (30) days of receipt of EPA's notification of the required revisions. Respondent shall implement the Work Plan as approved in writing by EPA in accordance with the schedule approved by EPA. Once approved, or approved with modifications, the Work Plan, the schedule, and any subsequent modifications shall be incorporated into and become fully enforceable under this Order.

45. Quality Assurance Project Plan and Sampling

a. Respondent shall submit for EPA review and approval a Quality Assurance Project Plan and Sampling Plan within sixty (60) days of the Effective Date of this Order. All sampling and analyses performed pursuant to this Order shall conform to EPA direction, approval, and guidance regarding sampling, quality assurance/quality control (QA/QC), data validation, and chain of custody procedures. Respondent shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate EPA guidance. Respondent shall use the following documents as guidance for QA/QC and sampling: "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures" (OSWER Directive No. 9360.4-01, April 1, 1990); "Environmental Response Team Standard Operating Procedures" (OSWER Directive Nos. 9360.4-02 through 9360.4-08); and any other pertinent EPA directives and guidance.

b. Upon request by EPA, Respondent shall have such laboratory analyze samples submitted by EPA for quality assurance monitoring. Respondent shall provide to EPA the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

c. Upon request by EPA, Respondent shall allow EPA or its authorized representatives to take split and/or duplicate samples. Respondent shall notify EPA not less than two (2) days in advance of any sample collection activity. EPA shall have the right to take any additional samples that EPA deems necessary.

46. Health and Safety Plan. Within sixty (60) days after the Effective Date of this Order, Respondent shall submit for EPA review and comment a Health and Safety Plan as described in the SOW. This plan shall be prepared in accordance with EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992). In addition, the plan shall comply with all currently applicable Occupational Safety and Health Administration (OSHA) regulations found at 29 C.F.R. Part 1910. Respondent shall incorporate all changes to the Health and Safety Plan recommended by EPA and shall implement the plan during the performance of the removal action.

47. Execute Removal Action Work Plan. Respondent shall execute the removal action in accordance with the EPA-approved Work Plan. As specified in Section 104 (a) (1) of CERCLA, as amended, EPA will provide oversight of Respondents' activities throughout the removal action. Respondent shall support EPA's initiation and conduct of activities related to the implementation of oversight activities.

48. Removal Action Report. Within thirty (30) days for completion of on-site construction, including grading, rock cover, soil cover, and initial vegetative seeding, Respondent shall submit for EPA review and approval a Removal Action Report in accordance with the attached SOW summarizing the actions taken to comply with this Order. The Removal Action Report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports". The Removal Action Report shall include a good-faith estimate of total costs or a statement of actual costs incurred in complying with the Order, a listing of quantities and types of materials removed off-site or handled on-site, a destination of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits). The Removal Action Report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

49. Post-Removal Site Control. Respondent shall provide long-term operations and maintenance of the Site to ensure the long-term effectiveness and integrity of the removal action as constructed by Respondent and as described in the EPA-approved Removal Action Report. At the same time that Respondent submits to EPA the Removal Action Report, Respondent shall also submit for EPA's review and approval a Post-Removal Site Control Plan prepared in accordance with the attached SOW and consistent with Section 300.415(1) of the NCP and OSWER Directive No. 9360.2-02. Respondent shall implement the Post-Removal Site Control Plan as approved by EPA.

50. Reporting

a. Respondent shall submit monthly written progress reports to EPA concerning actions undertaken pursuant to this Order by the first day of every month beginning with the first full month after the date of receipt of EPA's approval of the Work Plan until termination of this Order unless otherwise directed in writing by EPA's Project Coordinator. These reports shall describe all significant developments during the preceding month including the actions performed and any problems encountered; analytical data received during the reporting period; and the developments anticipated during the next reporting period including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

b. Respondent shall submit to EPA a written post-removal site control inspection report of Site conditions within thirty (30) days of the end of each six-month Site inspection period, as described in the SOW.

c. Respondent shall submit (1) one paper copy of all plans, reports or other submissions required by this Order, the attached SOW, or any approved work plan to EPA's Project Coordinator, and (2) one paper copy to Greg Bach, MDNR Hazardous Waste Program, P.O. Box 176, Jefferson City, Missouri 65102-0176. Respondent shall also submit electronic versions of the Work Plan, Removal Action Report, and Post-Removal Site Control Plan to EPA's Project Coordinator at the same time as submission of the paper copy. Electronic format text shall be provided in Microsoft Word software.

51. Institutional Controls and Property Use and Activity Restrictions

a. Respondent and any successors in title shall, at least thirty (30) days prior to the conveyance of any interest in their real property at the Site, give written notice of this Order to the transferee and written notice to EPA and the State of the proposed conveyance, including the name and address of the transferee. The party conveying such an interest shall require that the transferee comply with the Institutional Controls and Property Use and Activity Restrictions, and Access to Property and Information requirements of this Order.

b. Respondent shall not use its property at the Site which contains mine waste for any purpose that could reasonably be expected to attract children for significant periods of time, including but not limited to schools, child care facilities, playgrounds, parks, and picnic grounds. Respondent shall not use its property for residential purposes, except for existing residences, or future residences where children will not reside, such as senior citizen housing or nursing homes.

c. Respondent shall not conduct any excavation, drilling, or other similar intrusive activity which would disturb or otherwise interfere with the cover to be established and maintained on its property at the Site, except as provided in paragraph 51d below.

d. If Respondent wishes to change the use of its property at the Site which contains mine waste, or wishes to conduct excavation, drilling, or other intrusive activity that would disturb or otherwise interfere with the cover at the Site, such Respondent shall submit a written request to EPA seeking approval of such activity. The written request shall describe in detail the activity Respondent wishes to conduct, the procedures it will follow to ensure that human health and the environment are adequately protected during and after the activity, and the actions it will take to ensure that all mine waste is properly covered and the cover maintained following completion of any activity which disturbs the cover. EPA will review the request and either approve it, disapprove it, or require that Respondent resubmit its request with revisions and/or additional details.

e. Within sixty (60) days of the Effective Date of this Order, Respondent shall submit to EPA for review and approval, legal descriptions for the portions of property owned at the Site for inclusion with the Restrictive Covenants included as Appendix D. Within sixty (60) days of EPA's approval of the legal description, Respondent shall record with the St. Francois County Recorder of Deeds the Restrictive Covenant with the EPA-approved legal description for its property at the Site. Within thirty (30) days of recording the Restrictive Covenants, Respondent shall submit to EPA a copy of the Restrictive Covenant as recorded.

52. Community Relations. Respondent shall send, via registered mail, copies of all submissions required by this Order to EPA and MNDR. Respondent shall participate in public meetings when requested to do so by EPA.

#### D. EPA Review and Approval of Submissions

53. EPA will review Respondents' Work Plans, QAPP's, draft and final reports, and any other documents submitted pursuant to this Order (submissions), and will notify Respondent in writing of EPA's approval or disapproval of each such submission. In the event of EPA's disapproval, EPA will specify in writing any deficiencies in the submission. Respondent shall modify the submission to incorporate EPA's comments, and shall submit the amended submission to EPA in accordance with the schedule provided by EPA. Upon resubmission, EPA,

- at its sole discretion, may either approve the document, or if EPA determines that the document does not adequately address the comments provided by EPA, EPA may unilaterally modify the document, and will provide Respondent with a copy of the document, as modified by EPA, to be implemented in accordance with any modifications. If, upon resubmission, a document, or portion thereof, is unilaterally modified by EPA, Respondent will be deemed to have failed to submit such plan, report, or item timely and adequately and, as a result, may be in violation of this Order.

E. Access to Property and Information

54. Respondent shall provide and/or obtain access to all records and documentation related to the conditions at the Site and the action conducted pursuant to this Order, and provide access to all records and documentation related to the conditions at the Site and the action conducted pursuant to this Order. Such access shall be provided to EPA employees, contractors, agents, consultants, designees, representatives, and State representatives. These individuals shall be permitted to move freely at the Site and appropriate off-site areas in order to conduct actions which EPA determines to be necessary.

55. Respondent shall submit to EPA, upon receipt, the results of all sampling or tests and all other data generated by Respondent or its contractor(s), or on Respondent's behalf during implementation of this Order.

56. Where action under this Order is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall use their best efforts to obtain all necessary access agreements within twenty-one (21) days after the Effective Date of this Order or as otherwise specified in writing by EPA's Project Coordinator. Respondent shall immediately notify EPA if, after using its best efforts, it is unable to obtain such agreements. As used in this Section, "best efforts" shall include an initial visit, a follow-up telephone call and a certified letter from Respondent to the present owner of the property requesting an access agreement to permit Respondent and EPA, including its authorized representatives, access to the property to conduct the activities required under this Order. In Respondent's notification to EPA of failure to obtain access, Respondent shall describe and document, in writing, its efforts to obtain access. EPA may then assist Respondent in gaining access, to the extent necessary, to effectuate the removal actions described herein, using such means as EPA deems appropriate. EPA reserves the right to seek reimbursement from Respondent for all costs and attorney's fees incurred by the United States in obtaining access for Respondent.

57. Notwithstanding any provision of this Order, EPA retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.



F. Record Retention, Documentation, Availability of Information

58. Respondent shall preserve all documents and information relating to work performed under this Order, or relating to the hazardous substances found on or released from the Site, for ten (10) years following completion of the removal actions required by this Order. At the end of this ten (10) year period and thirty (30) days before any document or information is destroyed, Respondent shall notify EPA that such documents and information are available to EPA for inspection, and upon request, shall provide the originals or copies of such documents and information to EPA. In addition, Respondent shall provide documents and information retained under this Section at any time before expiration of the ten (10) year period at the written request of EPA.

59. Respondent may assert a business confidentiality claim pursuant to 40 C.F.R. § 2.203(b) with respect to part or all of any information submitted to EPA pursuant to this Order provided such claim is allowed by section 104(e)(7) of CERCLA, 42 U.S.C. 9604 e)(7). Analytical and other data specified in Section 104(e)(7)(F) of CERCLA, 42 U.S.C. 9604(e)(7) (F), shall not be claimed as confidential by the Respondent. EPA shall only disclose information covered by a business confidentiality claim to the extent permitted by and by means of the procedures set forth at 40 C.F.R. Part 2, Subpart B. If no such claim of confidentiality accompanies the information when it is received by EPA or if EPA has notified the Respondent that the information is not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, EPA may make said information available to the public without further notice to Respondent.

60. Respondent shall maintain a running log of privileged documents on a document-by-document basis, containing the date, author(s), addresses(s), subject, the privilege or grounds claimed (*e.g.* attorney work product, attorney-client privilege), and the factual basis for assertion of the privilege. Respondent shall keep the "privilege log" on file and available for inspection. EPA may at any time challenge claims of privilege through negotiations or otherwise as provided by law or the Federal Rules of Civil Procedure.

G. Off-Site Shipments

61. All hazardous substances, pollutants or contaminants removed off-Site pursuant to this Order for treatment, storage, or disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, with Section 121(d)(3) of CERCLA, 42 U.S.C. §9621(d)(3), and the Amendment to the NCP; and Procedures for Planning and Implementing Off-Site Response Actions: Final Rule, 58 Fed. Reg. 49200 (September 22, 1993), codified at 40 C.F.R. §300.440. Upon request, EPA's Project Coordinator will provide information to Respondent on the acceptability of a facility under Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and

the above rule. Unless impracticable, prior notification of out-of-state waste shipments should be given consistent with EPA's OSWER Directive 9330.2-07.

#### H. Compliance with Other Laws

62. Respondent shall perform all actions required pursuant to this Order in accordance with all applicable local, state, and federal laws and regulations except as provided in Section 121 (e) of CERCLA, 42 U.S.C. § 9621(e), and 40 C.F.R. §300.440(e) and 300.41 (j). In accordance with 40 C.F.R. §300.415(j), all on-Site actions required pursuant to this Order shall, to the extent practicable as determined by EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements (ARARs) under federal environmental or state environmental or facility siting laws (see "The Superfund Removal Procedures for Consideration of ARARs During Removal Actions," OSWER Directive No. 9360.3-02, August 1991).

#### I. Emergency Response and Notification of Releases

63. If any incident or change in Site conditions during the actions conducted pursuant to this Order causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment. Respondent shall immediately take all appropriate action. Respondent shall take these actions in accordance with all applicable provisions of this Order including but not limited to the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondent shall also immediately notify EPA's Project Coordinator or, in the event of his unavailability, the Regional Duty Officer, Emergency Planning and Response Branch, EPA, Region VII, at (913) 281-0991, of the incident or Site conditions. If Respondent fails to take appropriate response action, EPA may respond to the release or endangerment and reserves the right to pursue cost recovery.

64. In addition, in the event of any release of a hazardous substance from the Site, Respondent shall immediately notify EPA's Project Coordinator at (913) 551-7755, and the National Response Center at (800) 424-8802. Respondent shall submit a written report to EPA within seven (7) days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. §9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

## **VII. AUTHORITY OF EPA'S PROJECT COORDINATOR**

65. EPA's Project Coordinator shall be responsible for overseeing the proper and complete implementation of this Order. EPA's Project Coordinator shall have the authority vested in an On-Scene Coordinator (OSC) and a Remedial Project Manager (RPM) by the NCP, 40 C.F.R. § 300.120, including the authority to halt, conduct, or direct any action required by this Order, or to direct any other removal action undertaken by EPA or Respondent at the Site. Absence of EPA's Project Coordinator from the Site shall not be cause for stoppage of work unless specifically directed by EPA's Project Coordinator.

66. The EPA and Respondent shall have the right to change their designated Project Coordinators. The EPA shall notify Respondent and Respondent shall notify EPA fourteen (14) days before such a change is made. Notification may initially be made orally but shall be followed promptly by written notice.

## **VIII. ENFORCEMENT: PENALTIES FOR NONCOMPLIANCE**

67. Violation of any provision of this Order may subject Respondent to civil penalties of up to \$32,500.00 per violation per day as provided in Section 106(b)(1) of CERCLA, 42 U.S.C. § 9606(b)(1). Respondent may also be subject to punitive damages in an amount up to three times the amount of any cost incurred by the United States as a result of such violation as provided in Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Should Respondent violate this Order or any portion hereof, EPA may carry out the required actions unilaterally pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604, and/or may seek judicial enforcement of this Order pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606.

## **IX. RESERVATION OF RIGHTS**

68. Except as specifically provided in this Order, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Order, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law. The EPA reserves the right to bring an action against Respondent under Sections 107 of CERCLA, 42 U.S.C. § 9607, for recovery of any response costs incurred by the United States related to this Order or the Site and not reimbursed by Respondent.

## **X. OTHER CLAIMS**

69. By issuance of this Order, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or EPA shall not be deemed a party to any contract entered into by Respondent or its directors, officers, employees, agents, successors, representative, assigns, contractors, or consultants in carrying out actions pursuant to this Order.

70. This Order does not constitute a pre-authorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611 (a)(2).

71. Nothing in this Order constitutes a satisfaction of release from any claim or cause of action against Respondent or any person not a party to this Order for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. § 9606 and § 9607.

## **XI. MODIFICATIONS**

72. Modifications to any plan or schedule or the attached EPA Statement of Work may be made in writing by EPA's Project Coordinator or at EPA's Project Coordinators oral direction. If EPA's Project Coordinator makes an oral modification it will be memorialized in writing within fourteen (14) days, provided, however, that the effective date of the modification shall be the date of the EPA's Project Coordinator's oral direction. The rest of the Order, or any portion of the Order, may only be modified in writing by signature of the Superfund Division Director.

73. If Respondent seeks permission to deviate from any approved plan or schedule or Statement of Work, Respondent's Project Coordinator shall submit a written plan to EPA for approval outlining the proposed modification and its basis.

74. No informal advice, guidance, suggestion, or comment by EPA regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of their obligation to obtain any formal approval required by this Order or to comply with all requirements of this Order, unless it is formally modified.

## **XII. NOTICE OF COMPLETION**

75. When EPA determines, after EPA's review of the Removal Action Report, that all actions have been fully performed in accordance with this Order, with the exception of any continuing obligations required by this Order, including post-removal site control and record retention, EPA will provide written notice to Respondent. If EPA determines that any removal

actions have not been completed in accordance with this Order, EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent modify the Work Plan if appropriate in order to correct such deficiencies. Respondent shall implement the modified and approved Work Plan and shall submit a modified final report in accordance with the EPA notice. Failure by Respondent to implement the approved modified Work Plan shall be a violation of this Order.

### **XIII. ACCESS TO ADMINISTRATIVE RECORD**

76. The Administrative Record supporting this removal action is available for review at EPA, Region VII, 901 North Fifth Street, Kansas City, Kansas 66101; at the St. Francois County Health Department, 1025 West Main Street, Park Hills, Missouri 63601; and at the Desloge Public Library, 300 North Lincoln Street, Desloge, Missouri 63601.

### **XIV. OPPORTUNITY TO CONFER**

77. Within five (5) days after issuance of this Order, Respondent may request a conference with EPA. Any such conference shall be held within ten (10) days after the Effective Date of this Order unless extended by agreement of the parties. At any conference held pursuant to the request, Respondent may appear in person or be represented by an attorney or other representative.

78. If a conference is held, Respondent may present any information, arguments or comments regarding this Order. Regardless of whether a conference is held, Respondent may submit any information, arguments or comments in writing to EPA within five (5) days following the conference or within seven (7) days following the issuance of this Order if no conference is requested. This conference is not an evidentiary hearing, does not constitute a proceeding to challenge this Order, and does not give Respondent a right to seek review of this Order. Requests for a conference or any written submittal under this paragraph shall be directed to Jennifer Trotter, Assistant Regional Counsel, at (913) 551-7180, 901 North Fifth Street, Kansas City, Kansas 66101.

### **XV. INSURANCE**

79. Prior to commencing any on-Site work under this Order, Respondent shall secure and shall maintain for the duration of this Order, comprehensive general liability insurance and automobile insurance with limits of two million dollars, combined single limit. Within the same time period, Respondent shall provide EPA with certificates of such insurance and a copy of each insurance policy. If Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance

covering the same risks but in a lesser amount, then Respondent need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

#### **XVI. ADDITIONAL REMOVAL ACTIONS**

80. If EPA determines that additional removal actions not included in the Statement of Work are necessary to protect public health, welfare, or the environment, EPA will notify Respondent of that determination. Unless otherwise stated by EPA, within thirty (30) days of receipt of notice from EPA that additional removal actions are necessary to protect public health, welfare, or the environment, Respondent shall submit for approval by EPA, a Work Plan for the additional removal actions. The Work Plan shall conform to the applicable requirements of this Order. Upon EPA's approval of the Work Plan, Respondent shall implement the Work Plan for additional removal actions in accordance with the provisions and schedule contained therein. This section does not alter or diminish EPA's Project Coordinator's authority to make oral modifications to any plan or schedule pursuant to Section XI.

#### **XVII. SEVERABILITY**

81. If a court issues an order that invalidates any provision of this Order or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order, Respondent shall remain bound to comply with all provisions of this Order not invalidated or determined to be subject to a sufficient cause defense by the court's order.

#### **XVIII. EFFECTIVE DATE**

82. This Order shall be effective the date it is received by Respondent.

IT IS SO ORDERED



Cecilia Tapia

Director

Superfund Division

Region VII

U.S. Environmental Protection Agency

Date: 9-29-06

For the United States Environmental Protection Agency



Jennifer L. Trotter  
Assistant Regional Counsel  
Region 7  
U.S. Environmental Protection Agency

Date: 9-29-06

## APPENDIX A



## APPENDIX A

### Statement of Work for the Leadwood Mine Tailings Site

#### REMOVAL ACTION

##### I. Purpose

This Removal Action Statement of Work (SOW) sets forth removal action requirements for the Leadwood Mine Tailings Site (the Site). The Site includes the areas outlined in Figure 1 (attached). This SOW is an appendix to and is incorporated as part of the Unilateral Administrative Order (UAO), Docket No. CERCLA-07-2006-0272.

The Doe Run Resources Company (Respondent) shall conduct a removal action on the Site to stabilize erosion and reduce the potential for exposure to hazardous substances which are present at the Site and which present a threat to human health and the environment. Hazardous substances present at the Site include lead and other metals which are contained in material deposited at the site during the mining and processing of lead ores. The removal action shall comply with and be conducted in accordance with the Action Memorandum for the Site issued by EPA Region VII in June, 2006, which is attached as Appendix B to the UAO.

Following completion of construction of the removal action, Respondent shall ensure that all post-removal actions needed to ensure the continued long-term integrity and effectiveness of the completed removal action as constructed by Respondent and approved by EPA are performed.

##### II. *Removal Action Work Plan (Work Plan)*

Within 60 days of issuance of the UAO, Respondent shall prepare and submit for EPA review and approval a Work Plan which presents the plans and specifications for the removal action, and describes the proposed tasks and schedules associated with implementation of the action. The Work Plan shall be provided to EPA in both paper and electronic format. Electronic format text shall be provided in Microsoft Word software. One paper copy of the Work Plan shall also be provided to Mr. Robert Hinkson with the Missouri Department of Natural Resources (MDNR). The Work Plan shall demonstrate sound engineering judgment and be reviewed and stamped with the seal of a registered professional engineer registered in the state of Missouri prior to submittal to EPA. The Work Plan shall provide the following:

A. Management Chapter

A clear and concise description of roles, relationships and assignment of responsibilities among the Work Respondent, Project Coordinator, Quality Assurance Officer, Construction Supervisor and Construction Personnel.

B. Construction Chapter

The Work Plan shall include information necessary to implement the removal action, including:

1. Designs, plans and specifications, and other construction documents necessary to achieve erosional and geotechnical stability of the Site.
2. Field data collected, supporting calculations, designs, drawings and specifications which demonstrate that the construction will achieve long-term reduction in threat of release of hazardous substances. Among the design aspects to be addressed are the following:
  - a. specifications of materials (soil and rock) to be brought on site for final cover, including its gradation and total lead, cadmium, and zinc concentrations; cover soil shall contain no more than 25 percent rock by weight; cover rock type and gradation, screening techniques to minimize cover rock fines less than 1 inch diameter;
  - b. description of the revegetation strategy including seeding, fertilizer, proposed amendments, off-site cover soil sources, and any temporary seeding strategy; soil cover shall be a minimum of 6 inches thick on gently sloping and flat areas of the Site and as delineated in the EE/CA; seed mix shall consist of a mixture of perennial native grasses, legumes and forbs; cover soil shall be rolled and prepped as appropriate for seeding; seeding schedule; identification of fertilizers, application rates and times; identification of soil amendments and application rates; hydromulching;
  - c. description of construction methods, equipment, and personnel to accommodate the placement of cover material at the final grade; and
  - d. any assumptions made by Respondent in developing design parameters shall be clearly stated and supported by sound engineering practice;

3. Removal Action Schedule that describes each phase of the removal action. For each construction milestone the schedule shall provide specific time periods starting from the EPA-approval of the Work Plan to completion of construction milestones and the project. Grading and cover placement shall be completed within two (2) years of the effective date of the UAO;
4. Detailed description of Site preparation activities, including access agreements, establishment of security and control, definition of clearing and grubbing limits, establishment of work and support areas, and definition of decontamination areas;
5. Description of construction quality control process necessary to successfully construct the design including grade control method and geotechnical sampling during construction;
6. Dewatering contingency plans and fluids management procedures including details for drainage ways, weirs, and retention basins;
7. Run-on and Run-off controls during construction, including location, frequency, and methods for collecting water samples which will ensure compliance with NPDES or other water quality standards;
8. Spill prevention and management;
9. Detailed description of on-site soil storage and waste processing methods;
10. Design of a dust suppression program to be used during site material handling activities, and description of the methods to be used to control fugitive dust and monitor air quality. The regrading and construction techniques must minimize the release of contaminants via airborne emissions and surface runoff. Chemical dust suppressants and/or water shall be used during Site activities to minimize generation of airborne emissions. Respondents must monitor the ambient air during stabilization and cover construction. Ambient air monitored during performance of the removal activities shall meet National Primary and Secondary Ambient Air Quality Standards and/or levels protective of human health as determined by the EPA;
11. List of heavy equipment and operators dedicated to the project and a description of decontamination procedures for heavy equipment.
12. Identification of the method of transportation for any contaminated

materials to be removed from the Site, manifesting requirements in accordance with federal and state Department of Transportation (DOT) regulations, and material quantity accounting procedures. In addition, the Respondent shall provide written notice prior to any off-site shipment of hazardous material;

13. A description of how the removal action will comply with ARARs and meet substantive permitting requirements.

C. Quality Assurance Project Plan (QAPP) Chapter

For all chemical analyses, the Respondent shall discuss the field sampling protocol, frequency of sampling, parameters to be analyzed, and the name and certification requirements for all laboratories to be used. Chemical analysis will be conducted for at least the following activities:

1. compliance with ARARs (e.g. NPDES parameters);
2. analysis to document clean cover materials; and
3. analysis to confirm removal of tailings from Eaton Creek.

III. *Site Specific Health And Safety Plan (SSHSP)*

The Respondent is responsible for developing and implementing a health and safety program that is in compliance with OSHA regulations and protocols. The SSHSP shall cover both design data collection and construction activities. The SSHSP shall be completed prior to intrusive field work. The EPA will review the plan to assure that all necessary elements are included, but will not provide formal approval.

IV. *Execution*

The Respondent shall execute the Removal Action in accordance with the EPA-approved Work Plan. As specified in Section 104(a)(1) of CERCLA, as amended by SARA, EPA will provide oversight of the Respondent's activities throughout the Removal Action. Respondent shall support EPA's initiation and conduct of activities related to the implementation of oversight activities.

V. *Removal Action Report*

Respondent shall submit for EPA review and approval a *Removal Action Report* within thirty (30) days after the activities described herein have been accomplished. One copy shall also be provided to MDNR. The *Removal*

*Action Report* shall include as-built drawings of final constructed configurations; a description of measures taken on this portion of the Site; quality control and monitoring results during construction; documentation that a sufficient cover has been established, in compliance with ARARS set forth in the Action Memorandum and EE/CA; and empirical data, observations, photographs of Site construction, and calculations which demonstrate that the removal action will provide long-term erosional stability of the pile. The *Removal Action Report* shall be reviewed and stamped with the seal of a registered professional engineer registered in the state of Missouri. The Removal Action Report shall also include the following certification signed by a person who supervised or directed the preparation of the Report:

"Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved with the preparation of this report, the information submitted is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

#### VI. *Post-Removal Site Control*

Respondent shall provide long-term operations and maintenance of the tailings areas and retention basins to ensure the long-term effectiveness and integrity of the removal action as constructed by Respondent and as described in the EPA approved *Removal Action Report*. At the same time that Respondent submit to EPA the *Removal Action Report*, Respondent shall also submit for EPA review and approval a *Post-Removal Site Control Plan* in both paper copy and electronic format. This Plan shall provide for all inspection, operation, and maintenance measures that are necessary to ensure the continued long-term effectiveness and integrity of the removal action for the Site. The Plan shall provide a schedule for the implementation of repair and maintenance work at the Site. Once approved by EPA, the Respondent shall implement the Post-Removal Site Control Plan.

The Plan shall describe timing and details of sampling inspection processes, steps to develop corrective actions, EPA notification process for non-routine issues, measures to enhance and repair vegetation growth, measures to repair rocked slopes, and land-use development. At a minimum, the Site shall be inspected by Respondent every 6 months. The *Post-Removal Site Control Plan* shall be reviewed and stamped with the seal of a registered professional engineer registered in the state of Missouri.

The Respondent shall provide EPA with a written inspection report of the Site condition within thirty (30) days of the end of each 6-month, Site inspection period. At a minimum, the inspection report shall provide a description of the condition of the rock cover, soil cover, vegetation, and Site security measures.

The report shall also provide all data results for samples collected at the Site and describe the details of any damage/deterioration to the cover materials. The Inspection Reports shall be certified in writing as described in Section V of this SOW.

VII. *Community Relations*

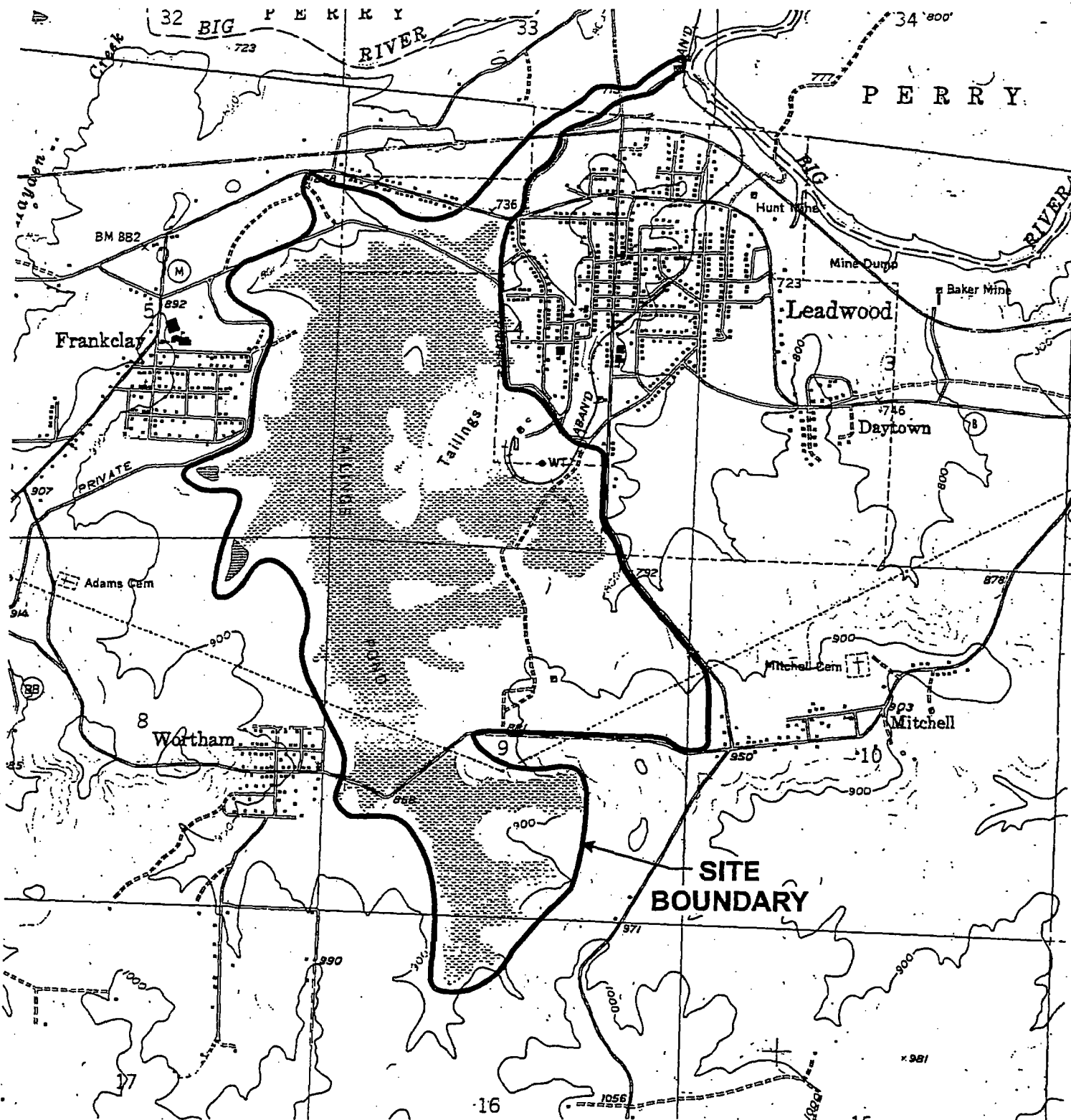
Because the community has an interest in the ultimate use of the properties, the Respondent shall provide copies of the final Work Plan, design documents, and other pertinent information to the City of Leadwood. The Respondent shall also participate, as requested by the EPA, in meetings with the EPA and the community to discuss design and or construction issues.

VIII. *Monthly Progress Reports*

Throughout the course of the removal action until the *Removal Action Report* approval by EPA, Respondent shall submit to the EPA written monthly progress reports in accordance with the UAO. The monthly progress reports shall include, at a minimum:

1. A description of the actions completed during the reporting period;
2. A description of actions scheduled for completion during the reporting period which were not completed along with a statement indicating why such actions were not completed and an anticipated completion date;
3. Copies of all sampling and test results received during the reporting period;
4. Any proposed revisions to the project schedule for review and approval by EPA; and
5. A description of the actions which are scheduled for completion during the next reporting period.

## FIGURE 1



Source: USGS 7.5' Quadrangle, Flat River, MO 1958 Photorevised 1982



QUADRANGLE LOCATION

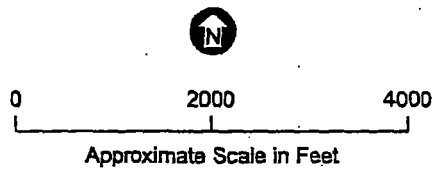


Figure 1  
of  
Appendix A

Figure 1

**SITE LOCATION MAP**  
Leadwood Mine Tailings Site  
Leadwood, Missouri



## **APPENDIX B**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII  
901 NORTH 5TH STREET  
KANSAS CITY, KANSAS 66101

JUN 22 2006

ACTION MEMORANDUM/ENFORCEMENT

SUBJECT: Request for Removal Action at the Leadwood Mine Tailings Site,  
St. Francois County, Missouri

FROM: Bruce A. Morrison, Remedial Project Manager  
FFSE/SUPR *B. Morrison*

THRU: Gene Gunn, Chief *G. Gunn*  
FFSE/SUPR

TO: Cecilia Tapia, Director  
SUPR

Site ID#: WF  
Category of Removal: Non-Time Critical  
CERCLIS ID #: MOD985818210  
Nationally Significant/Precedent Setting: No

I. PURPOSE

The purpose of this Action Memorandum is to request approval for a non-time critical removal action at the Leadwood Mine Tailings Site (Site), which is located adjacent to the towns of Leadwood, Wortham, and Frank Clay in St. Francois County, Missouri. The removal action will consist of regrading and covering approximately 560 acres of lead-contaminated mine wastes consisting of chat and tailings. These actions are intended to stabilize the mine wastes and mitigate their migration off site via surface runoff and wind erosion.

On February 28, 2006, the Environmental Protection Agency (EPA) released an Engineering Evaluation/Cost Analysis (EE/CA) which described conditions at the Site and evaluated different removal action alternatives. The EE/CA was available for public comment for more than 30 days following its release. Attached to this action memorandum is a Responsiveness Summary which contains the EPA's responses to the comments it received concerning the EE/CA.

The information supporting this removal action decision, including the EE/CA and all the public comments which EPA received during the public comment period, is contained in the Administrative Record for the Site. The Administrative Record is available for review at the Leadwood City Hall and the EPA, Region 7 Docket Room.

## L SITE DESCRIPTION AND BACKGROUND

### A. Site Description

#### 1. Background

The Site is located south of State Highway 8 between the towns of Leadwood, Frank Clay, and Wortham, Missouri. Approximately 1,165 people live in the towns adjacent to the Site.

The Site lies within the "Old Lead Belt" which covers an area of approximately 110 square miles. This area was the nation's largest producer of lead from 1907 to 1953. Approximately 8 million tons of lead were produced, resulting in the production of 250 million tons of mine waste tailings. The Big River drainage basin which drains the Old Lead Belt is estimated to contain 3,000 acres of tailings. Tailings from these waste piles are easily transported and released to surface water bodies and ambient air via wind and water erosion.

Mining activities commenced at and near the Site in approximately 1894. Early operations included mining, milling at numerous locations, roasting, and smelting. By approximately 1909 milling in the Site area had been consolidated to the south boundary of the Site. Ore fed to the Site's mill was from multiple mines in the area. Ore was hauled to the mill from remote locations by rail, aboveground (early) and underground (later). The Site's mill was modernized and enlarged on occasion, until it was permanently closed about 1965.

#### 2. Physical Location

The Site is located in Sections 4,5,8,9, and 16, Township 36, North, Range 4 East, of the Flat River 7.5 Minute Quadrangle Map. Site geographic coordinates 37° 51' 10" North Latitude and 90° 36' 15" West Longitude.

#### 3. Site Characteristics

Barren tailings cover approximately 228 acres and an additional 300 acres are covered with sparsely or partially vegetated tailings. Other features of the Site include a 35-acre chat pile, mill facility remnants, mine shaft remnants, and two tailings dams. The depth of mine tailings at the Site varies and their volume is estimated to be 5,100,000 cubic yards. Residential dwellings are located with close proximity of the Site, and during periods of high wind, off-Site releases of heavy metals occur via wind-blown tailings. Accessibility to the Site is high, and the Site is frequented by off-road vehicles (ORVs). Surface water from the Site discharges into Eaton Creek and eventually to the Big River.

#### 4. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

Lead is a hazardous substance as defined by Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and is listed at 40 C.F.R. 302.4.

A 1983 study of the Leadwood Tailings Pile completed by the University of Missouri – Rolla included the collection of 98 near surface samples of the mine waste located north of Wortham Road at the Site. Lead concentrations within the tailings and chat ranged from 597 to 17,000 parts per million (ppm); cadmium ranged from 9.3 to 1,870 ppm; and zinc ranged from 633 to 25,800 ppm.

The average lead, cadmium, and zinc concentrations measured in the study were 2,448 ppm, 269 ppm, and 5,015 ppm respectively.

The EPA conducted a Site Screening Inspection at the Site in May 1994. Four tailings samples contained lead at concentrations ranging from 637 to 3,990 ppm; cadmium ranging from 12.5 to 97.5 ppm; and zinc ranging from 655 to 8,260 ppm. Four surface water samples collected during the inspection detected a maximum lead concentration of 47.6 micrograms per liter ( $\mu\text{g/L}$ ); a maximum cadmium concentration of 8.79  $\mu\text{g/L}$ ; and a maximum zinc concentration of 2,870  $\mu\text{g/L}$ .

Sampling conducted in 2003 as part of the development of the EE/CA detected maximum lead, zinc, and cadmium concentrations in the tailings at 28,000 ppm, 21,700 ppm, and 439 ppm respectively. Water samples collected from Eaton Creek, a stream that receives surface runoff from the tailings pile at the Site, contained maximum total lead, zinc, and cadmium concentrations at 12.4  $\mu\text{g/L}$ , 1,510  $\mu\text{g/L}$ , and 5.0  $\mu\text{g/L}$  respectively. For an average water hardness of 197 milligrams per liter ( $\text{mg/L}$ ) as  $\text{CaCO}_3$ , surface water chronic criteria for protection of aquatic life for total lead, zinc, and cadmium are 7.5  $\mu\text{g/L}$ , 142  $\mu\text{g/L}$ , and 0.45  $\mu\text{g/L}$  respectively.

The EPA collected sediment samples from the Big River at upstream and downstream locations of the Leadwood Tailings Pile in the fall of 2005. Maximum upstream sediment concentrations of lead, zinc, and cadmium were measured at 19.1 ppm, 83 ppm, and 0.3 ppm respectively. The maximum downstream sediment concentrations of lead, zinc, and cadmium were measured at 26,600 ppm, 9,300 ppm, and 227 respectively. The mean upstream sediment concentrations of lead, zinc, and cadmium were 18.7 ppm, 53.9 ppm, and 0.3 ppm respectively. The mean sediment concentrations for lead, zinc, and cadmium for samples collected downstream of the Leadwood Site were 2,252.6 ppm, 1,375.9 ppm, and 25.8 respectively. The current McDonald's Sediment Quality Guidelines for lead, zinc, and cadmium are 35.8 ppm, 121 ppm, and 0.99 ppm respectively.

#### 5. National Priorities List Status

The Site is not currently listed nor proposed for listing on the National Priorities List.

#### 6. Supporting Documentation

Reports of investigations, reports of sampling and analysis, and other relevant documents regarding the contamination at the Site will be contained in the Site's Administrative Record. The Administrative Record is currently being developed.

B. Other Actions to Date

1. Previous Actions

No previous response actions have been conducted by EPA at this Site.

2. Current Action

There are no current response actions being conducted by EPA at the Site.

1. State and Local Actions to Date

State and local authorities have not taken any response actions at the Site.

2. Potential for State/Local Response

There is no potential for the state or local authorities to conduct response actions at the Site.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Section 300.415(b) of the National Contingency Plan (NCP) provides that the EPA may conduct a removal action when it determines that there is a threat to human health or welfare or the environment based on one or more of the eight factors listed in Section 300.415(b)(2). The factors which justify a removal action at this Site are outlined below.

A. Threats to Public Health or Welfare

1. 300.415(b)(2)(i) -- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

Potential exposure of nearby populations to elevated concentrations of lead, zinc, and cadmium has been documented in previous Site investigations. High concentrations of lead, and zinc have been detected in the tailings throughout previous Site investigations. The nearby population will continue to be exposed to the off-Site migration of lead-contaminated tailings via surface runoff and wind erosion. Area recreationalists who enter the site are directly exposed to elevated lead concentrations and risk tracking the tailings/chat back to their homes.

When assessing the threats to public health at the Site and in St. Francois County, the EPA considered studies conducted which assess the effects of lead on human health. The EPA also relied on widely accepted toxicological references and on case studies which assess human health effects.

Lead is a metal and a constituent of D008 hazardous waste. Lead is classified by the EPA as a probable human carcinogen and is a cumulative toxicant. The early effects of lead poisoning are nonspecific and difficult to distinguish from the symptoms of minor seasonal illnesses. Lead poisoning causes decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, digestive symptoms (particularly constipation), abdominal cramping, nausea, vomiting, and decreased appetite. With increased exposure, symptoms include anemia, pallor, a "lead line" on the gums, and decreased handgrip strength. Alcohol and physical exertion may precipitate these symptoms. The radial nerve is affected most severely causing weakness in the hands and wrists. Central nervous system effects include severe headaches, convulsions, coma, delirium, and possibly death. The kidneys can also be damaged after long periods of exposure to lead, with loss of kidney function and progressive azotemia. Reproductive effects in women include decreased fertility, increased rates of miscarriage and stillbirth, decreased birth weight, premature rupture of membrane, and/or pre-term delivery. Reproductive effects in men include erectile dysfunction, decreased sperm count, abnormal sperm shape and size, and reduced semen volume. Lead exposure is associated with increases in blood pressure and left ventricular hypertrophy. A significant amount of lead that enters the body is stored in the bone for many years and can be considered an irreversible health effect.

In May 1997, the Missouri Department of Health (MDOH) released a draft Lead Exposure study of children in the Old Lead Belt of St. Francois County. The MDOH study, funded by the Agency for Toxic Substances and Disease Registry (ATSDR), EPA, and The Doe Run Resources Company, included sampling children's blood, sampling environmental media such as soil and dust, and questioning residents about their lifestyle as it relates to lead exposure. The study compared the information in the Old Lead Belt of St. Francois County to information collected during the study on a control area, Salem, Missouri, located outside the area of concern. In the Old Lead Belt, about 17 percent of the children tested showed a blood lead level of more than 10 micrograms/deciliter whereas only about 3 percent of the children in Salem were elevated.

Zinc is a metal that is found in air, soil, water and all foods. Small amounts of zinc are considered important for a healthy diet, but too much zinc ingested can cause stomach and digestive problems, interfere with the body's ability to take in other essential minerals such as iron and copper, and interfere with the body's immune system. Inhalation of large amounts of zinc dust can cause a syndrome known as metal fume fever. It is not known whether zinc causes cancer or birth defects.

Cadmium has no known positive human health effects. Breathing air with very high levels of cadmium severely damages the lungs and can cause death. Breathing lower concentrations of cadmium over a period of years can cause kidney disease, lung damage and fragile bones. Breathing cadmium causes liver damage and changes in the immune system in rats and mice. The ingestion of high concentrations of cadmium causes vomiting and diarrhea. Ingestion of lower concentrations of cadmium over a long period of time leads to kidney damage and fragile bones. The EPA has determined that cadmium is a probable human carcinogen by inhalation.

2. 300.415(b)(2)(iv) -- High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate.

Lead, zinc, and cadmium have been detected in mine tailings at the Site above levels of concern. Contaminated tailings may migrate via airborne dusts, surface runoff, and by people and pets transporting tailings/dusts into their homes from the affected areas.

3. 300.415(b)(2)(v) -- Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

Weather conditions may cause the contaminated mine tailings to migrate. High wind events could cause the tailings and contaminated soils to migrate via airborne dusts. Rain or thundershowers may cause contamination to migrate via surface runoff.

4. 300.415(b)(2)(vii) -- The availability of other appropriate federal or state response mechanisms to respond to the release.

There are no other state or federal authorities who are able to respond to the release of hazardous substances at this Site.

#### IV. ADDITIONAL FACTORS DEMONSTRATING APPROPRIATENESS OF REMOVAL ACTION

In addition to considering Section 300.415(b)(2) factors, the EPA considers the following additional factors in determining whether to employ a non-time critical removal action or a remedial action in a particular situation: (1) time-sensitivity of the response; (2) the complexity of both the problems to be addressed and the action to be taken; (3) the comprehensiveness of the proposed action; and (4) the likely cost of the action.

##### 1. Time-Sensitivity of the Response

Residential areas are located adjacent to the Site. During periods of high wind, releases of heavy metals via blown tailings occur. Nearby residential soil sampling indicates elevated lead, cadmium, and zinc levels. Accessibility to the Site is high, and the Site is frequently used by the public for ORV use. Surface water from the Site discharges into Eaton Creek and to the Big River. Surface water and sediment samples from Eaton Creek and the Big River indicate elevated lead, cadmium and zinc levels. The mine waste at the Site presents a threat to human health and the environment due to direct exposure to the mine waste and contaminated soils, as well as from wind and surface water erosion. The Site is an on-going source of contamination to nearby residential yards and surface water.

The 1997 draft Lead Exposure study of children in the Old Lead Belt of St. Francois County, discussed in Section III, revealed that 17 percent of children tested in St. Francois County showed high blood lead levels (> 10 micrograms/deciliter) compared to 3 percent in the control area of Salem, Missouri.

A Remedial Investigation and Feasibility Study (RI/FS), encompassing this Site along with the other mine waste sites in St. Francois County, including the Big River Mine Tailings Site, which was added to the National Priorities List in 1992, is currently being performed by PRPs pursuant to an Administrative Order on Consent. Due to the large scale of the RI/FS, it will be approximately two years before it is completed and a remedy selected and implemented for the area.

On April 4, 2000, an Administrative Order on Consent (AOC) was signed by The Doe Run Resources Corporation and EPA to implement a soil testing and removal program and a blood lead testing and control program within St. Francois County. This interim removal program provides for cleanup of high lead-contaminated residential yards in the vicinity of the mine waste sites. A subsequent AOC was entered into by the parties on March 29, 2004, to continue the replacement of lead-contaminated yard soils at residential properties near milling waste piles and historical smelters.

This non-time critical removal action will address immediate risks to human health and the environment caused by direct exposure to mine waste by area recreationalists, as well as eliminate further on-going contamination of surface water and adjacent residential yards due to surface water runoff and wind erosion. At similar sites within St. Francois County, removal actions consisted of stabilization, capping and vegetation of exposed mine waste. This removal action will be completed before a remedial action remedy addressing the historic contamination is selected and implemented. It is not appropriate to wait until the RI/FS is completed and remedial action remedy implemented before taking action to address the major sources of contamination (i.e. tailings piles) and associated exposure risks to human health and the environment at the Site. The potential for continuing off-Site migration of tailings and chat will contribute to increasing lead, cadmium and zinc levels in area residents' homes and yards. In addition, the on-going source migration can potentially re-contaminate yards cleaned up under the interim removal action.

## 2. Complexity of Both the Problems to be Addressed and the Action to be Taken

While the investigation and mitigation of threats to human health and the environment caused by historic contamination at the Site (including surface water and sediments, adjacent soil contamination, and groundwater) involve some degree of complexity, the current direct exposure to the mine waste and the on-going source contamination due to surface water runoff and wind erosion can be mitigated using common stabilization techniques. Due to the volume of mine waste at the Site, the only feasible option to address direct contact with mine waste and eliminate continuing wind and surface water erosion is a straightforward engineering solution consisting of stabilization, capping and vegetation of exposed mine waste, or some combination of these options. This has been implemented at similar sites within St. Francois County. Rather than use remedial authority, a removal action will address immediate risks to human health and the environment as well as continuing contamination by the source material and it can be achieved before a remedy can be selected and implemented at the Site.



### 3. Comprehensiveness of the Proposed Action

The EE/CA and subsequent removal action will provide a partial response to the contamination and the immediate threat posed by the mine wastes at the Site. The EE/CA and removal action will address the immediate risks such as direct exposure to the mine waste at the Site as well as on-going contamination of surface water and adjacent residential homes and yards due to surface water runoff and wind erosion. The RI/FS and selected remedy will address the more complex and long-term historic contamination of surface water, sediments, soils, and groundwater.

### 4. Likely Cost of the Action

Based on removal actions at similar sites within St. Francois County, the approximate cost of the removal action to address the immediate risks and continuing source contamination at this Site is estimated to be \$7.541 million.

It is appropriate to conduct this non-time critical removal action to achieve immediate risk reduction and control on-going source contamination while the RI/FS is being completed. This removal action will be consistent with the final remedy for the Site.

## V. ENDANGERMENT DETERMINATION

The actual release of a hazardous substance at this Site, if not addressed by implementing the response action selected in this Action Memorandum, presents an imminent and substantial endangerment to the health of the public in the surrounding area. Federal and state agencies are recommending that immediate response action be taken to reduce potential exposure to lead.

## VI. EXEMPTION FROM STATUTORY CRITERIA

Section 104(c) of CERCLA sets forth certain criteria which must be satisfied in order for this removal action to exceed the statutory 12 month and \$2 million limitations on removal actions. This removal action is expected to cost \$7.541 million and require 1 to 2.5 years to complete. The action qualifies for the "consistency" exemption contained in Section 104(c) of CERCLA, which provides for an exemption from the time and dollar limits for removal actions that are appropriate and consistent with the remedial action to be taken. Stabilization of the pile will prevent further off-Site releases of contaminants from the pile to surrounding residential properties and Flat River. These areas will be the focus of a future remedial action, and thus this removal action will be consistent with any remedial action to be taken at the site.

## VII PROPOSED ACTIONS AND ESTIMATED COST

### A. Proposed Actions

#### 1. Proposed Action Description

The selected removal alternative for this Site consists of three components: (1) grading, (2) covering, and (3) administrative controls. These components are described for each portion of the Site as follows:

**Chat Pile:** The chat pile will be lowered approximately 30 feet and the adjacent slimes area will be over-excavated and be placed in the depression located east of the chat pile. A minimum of three feet of chat will be used to cover the material placed in the depression. All side slopes will be regraded to 3 horizontal to 1 vertical and covered with a minimum of 12 inches of rock.

**Tailings area:** A stormwater control structure will be constructed, and the intake of the Eaton Dam outlet structure will be modified as part of the modified stormwater pollution prevention plan. These structures will be utilized to redirect the flow of stormwater to the western side of the Site, slow the flow of water across the Tailings Area, and reduce the amount of sediment migrating across the site.

Regrading activities will be completed on areas where steep slopes or excessive erosion have occurred making revegetation difficult. These areas will be regraded to a gradient of 3 horizontal to 1 vertical or less. Upon the completion of regrading activities, these areas that have a gradient steeper than 4 horizontal to 1 vertical will be covered with a minimum of 12 inches of graded rock. Optimum rock grading will be determined and described in the Removal Action Work Plan. Most of the remnant mining and milling structures will be demolished and buried on site. Exceptions will be several decant structures will be modified and incorporated into the surface drainage design and two mill facility buildings will remain in use.

The tailings in the east seep and erosion area will be regraded to more effectively control stormwater runoff. Modifications will include the refurbishment of the decant tower and outlet structure, raising of the crest of the eastern tailings slope to elevation 859.0, and the placement of a minimum of 12 inches of rock cover on the eastern slope of the area.

Tailings that have migrated past the tailings dams and into Eaton Creek flood plain will be removed from the Eaton Creek Channel. Tailings in the Eaton Creek flood plain located between Highway 8 and the Big River will be removed and placed on the upstream side of the Leadwood Dam. Tailings located in the Eaton Creek flood plain between Eaton Dam and Highway 8 will be pulled back from the creek channel, graded to 4 horizontal to 1 vertical, and covered with a minimum of 6 inches of soil. Bulk tailings that have migrated from the East Seep and Erosion Area east of Davis Crossing Road will be excavated and consolidated with tailings upstream of Eaton Dam.

In response to public comments, two minor changes are being added to the recommended removal alternative. The first change is an extension of the Site boundary to include the removal of tailings from approximately two acres of property east of Davis crossing road at the East Seep and Erosion Area where tailings have migrated from the pile onto the adjacent landowner's property. The tailings in this area will be disposed of on the Tailings pile west of Davis Crossing Road and upstream of Eaton Dam. The additional cost of this action is estimated to be \$25,000. The second change to the recommended removal alternative is the use of rock cover on the downstream side of Eaton and Leadwood Dam instead of soil. The EE/CA was contradictory as to whether these areas would be covered with any material and indicated that slopes less than 4 horizontal to 1 vertical would be covered with soil and vegetated. EPA proposes using a 12-inch rock cover instead of soil because soil cover would require slope terracing to reduce runoff velocity, soil cover will require more maintenance than rock, and a rock cover will provide more deterrence to trespassers as compared to a soil cover.

Administrative controls for the Site will include partial fencing, posting of warning signs, institutional controls, and daytime surveillance.

## 2. Contribution to Remedial Performance

The removal action described in this Action Memorandum will be consistent with future remedial actions that may be taken at this Site.

## 3. Applicable Relevant and Appropriate Requirements (ARARs)

The Applicable or Relevant and Appropriate Requirements (ARARs) for the removal action, which were discussed in detail in the EE/CA, include the following:

- National Ambient Air Quality Standards (NAAQS)
- Fugitive Particulate Matter Regulations
- Surface Mining Control and Reclamation Act (SMCRA)
- Clean Water Act (CWA) Direct Discharge Requirements
- Storm Water Requirements (10 CSR 20-6.200)
- Protection of Flood Plains
- RCRA Subtitle D Solid Waste Disposal Regulations

## 4. Engineering Evaluation/Cost Analysis (EE/CA)

The (EE/CA) was released for public comment February 28, 2006, and a public comment period ended on March 30, 2006. A public meeting was held on February 28, 2006, in Leadwood, Missouri. A summary of the comments/questions received and EPA's responses are in the attached Responsiveness Summary.

## 5. Project Schedule and Cost

The total estimated cost for the implementation of the selected removal action alternative is \$7.541 million. The construction and cover placement is estimated to take from 1 to 2.5 years following the completion of the Removal Action Work Plan, and is dependent on the workforce and equipment dedicated to the project.

## VIII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Conditions at this Site will continue to pose a threat to public health and the environment until response actions are implemented.

## IX. OUTSTANDING POLICY ISSUES

None.

## X. ENFORCEMENT

This site is similar to other mine waste sites found in St. Francois County. The Doe Run Company, a mining company that has performed similar removal actions at other mine waste sites in the County, has participated in developing the EE/CA for the Site. The EPA anticipates that Doe Run will implement the recommended removal action described in this Action Memorandum.

EPA Direct Intramural Costs:	\$25,000
EPA Indirect Intramural Costs:	\$12,673
Total Intramural Costs:	\$38,200

The total EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be \$38,200.


Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

## XI. RECOMMENDATION

This decision document represents a selected removal action for the Leadwood Mine Tailings Site, Leadwood, Missouri, developed in accordance with CERCLA as amended and is consistent with the NCP. Conditions at the site meet the criteria for a removal action set forth in Section 300.415(b)(2) of the NCP.

Conditions at the Site meet NCP Section 300.415(b)(2) criteria for a removal action and I recommend your approval of the proposed removal action.

Approved:

 6-22-06  
Cecilia Tapia, Director Date  
Superfund Division

Attachment

**RESPONSIVENESS SUMMARY**  
**ENGINEERING EVALUATION/COST ANALYSIS**  
**LEADWOOD MINE TAILINGS SITE**

The National Oil and Hazardous Substances Pollution Contingency Plan (National Contingency Plan or NCP), 40 CFR §300 et seq., establishes procedures for evaluation of potential response actions at sites contaminated with hazardous substances. 40 CFR §300.415(b)(4) requires that, in instances where a planning period of at least six months exists, an Engineering Evaluation/Cost Analysis (EE/CA) shall be prepared that develops and evaluates potential response alternatives to address site contaminants. The EE/CA process involves providing an opportunity for public comment on the alternatives under consideration. This document presents United States Environmental Protection Agency's (EPA) responses to public comments received concerning the August 2005 draft EE/CA for the Leadwood Mine Tailings Site (the Site).

Upon consideration of conditions at the Site, EPA determined that preparation of an EE/CA was warranted since at least six months planning time was available. An agreement was reached between EPA and the identified Potentially Responsible Party (PRP) for the Site at that time, The Doe Run Company (Doe Run), whereby Doe Run agreed to take a lead role in the preparation of the EE/CA.

Doe Run submitted the draft EE/CA to EPA in August 2005. A public comment period was announced, commencing February 28, 2006, and ending March 30, 2006. A public meeting was held on February 28, 2006, at the West County High School to present the findings of the draft EE/CA and to receive comments from the community in attendance. A transcript of this public meeting was prepared to enable EPA to better respond to individual comments received from the community at that meeting.

During the public comment period, EPA did not receive any comments on the draft EE/CA from the community, other than the comments voiced at the February 28 public meeting. The Missouri Department of Natural Resources (MDNR) and the Doe Run Company provided written comments on the draft EE/CA.

Copies of the individual comments received by EPA concerning the EE/CA are available for public review in the Administrative Record located at the Leadwood City Hall or at the EPA Regional Office, 901 North 5<sup>th</sup> Street, Kansas City, Kansas, 66101. Questions regarding the EE/CA or document repositories should be directed to Debbie Kring, at (913) 551-7725, or toll-free at 1-800-223-0425.

Upon consideration of public comments received, EPA has elected to approve the draft EE/CA and proceed with the decision document, also known as the Action Memorandum, for finalizing EPA's decision to implement the EE/CA.

## **Response to Comments Received From The Doe Run Company (DRC)**

### **Comment:**

The DRC commented that the 1998 Health Study data presented in the EE/CA was misleading because 2003 blood lead prevalence data presented by the Missouri Department of Health and Human Services indicates a significantly less prevalence of child elevated blood lead in St. Francois County.

### **Response:**

The EPA agrees that the prevalence of child elevated blood leads in St. Francois County has been decreasing overall since the mid 1990s, and believes that this is partially due to the removal actions at other tailings piles, yard soil cleanups, and health education activities in St. Francois County. However, mine wastes abandoned in Leadwood continue to pose a significant health threat to public health and the environment due to a lack of measures implemented to prevent direct contact and off-site migration of the wastes.

### **Comment:**

The DRC commented that the EE/CA contends that compliance with re-vegetation applicable or relevant and appropriate requirements (ARARs) requires that an alternative vegetation strategy establish vegetation (that meets ARARs) within three years. DRC stated in their comments that they have demonstrated at the Big River Mine Tailings Site (BRMTS) that a sustainable vegetative cover that substantially reduces any potential washing or blowing of tailings off-site can be established on most areas by direct seeding/fertilizing of bare tailings and is confident that it will make such a demonstration to EPA Region VII.

### **Response:**

The EPA is aware of the time requirements in the Surface Mining Control and Reclamation Act (SMCRA) for establishing vegetation on restored mining lands. EPA has imposed the three year time limit on establishing the vegetation in any alternative revegetation strategy because of the history of The Doe Run Company's vegetation strategy in St. Francois County. The vegetation strategy being implemented by Doe Run at the BRMTS includes a trial effort to establish vegetation using ongoing applications of biosolids directly on tailings. Since early 2000, Doe Run has routinely applied biosolids to areas of tailings to enhance vegetation growth. In May 2000, Mr. William Joseph of the Federal Office of Surface Mining inspected the areas of the BRMTS for vegetation and soil quality. Mr. Joseph concluded from his inspection that the vegetation appeared to be failing in some of the areas he inspected and noted that you cannot make a soil by adding biosolids to sand. Mr. Joseph also noted that there was a minimal soil horizon that was present where biosolids had been applied and that the vegetation would likely fail when the biosolids applications stopped. The routine application of biosolids to maintain a vegetative cover does not meet the criteria set forth in SMCRA which requires that vegetation be

permanent and capable of self-regeneration using normal husbandry practices for the region. Mr. Joseph stated that it may be possible to develop a desert-like vegetative cover although, this would not be consistent with the surrounding vegetation of the Site. While it has been observed that some vegetation can grow in areas of barren tailings in St. Francois County, this vegetation appears to have low densities with many areas void of any significant vegetative cover.

Comment:

The DRC commented that they plan to seed with tall fescue and apply biosolids to areas of the site in 2006.

Response:

Although EPA welcomes efforts by The Doe Run Company to address the off-site migration of their abandoned mine wastes in St. Francois County, it is recommended that these actions be consistent with the recommended removal alternative and SMCRA ARARs identified in the draft EE/CA for the Leadwood Mine Tailings Site.

Comment:

The DRC commented that the vegetation practices implemented at the BRMTS are appropriate and will be effective in establishing acceptable vegetation at the Leadwood Mine Tailings Site.

Response:

The EPA disagrees with this statement and this revegetation approach. Since biosolids applications continue at the BRMTS or have only recently stopped, the self-sustainability of this vegetation has not been demonstrated. The placement of a soil cover prior to seeding will immediately reduce the threat of direct contact to mine waste, reduce the off-site migration of mine wastes via surface runoff, and significantly increase the probability of establishing a self-regenerating vegetative cover that meets the criteria established in SMCRA. It has also been demonstrated at other mine waste sites that vegetation established in a soil cover requires significantly less maintenance.

Comment:

The DRC commented that EPA should consider the environmental impacts of disturbing top soil for clean cover material at the site.

Response:

The EPA is aware of the impacts of removing clean soil for backfill and cover material from properties and the state of Missouri has regulations that pertain to this activity. The benefits of covering mine wastes contaminated with lead, zinc, and cadmium to prevent their continued off-site migration into the surrounding communities and aquatic ecosystems far outweighs the temporary impacts of stripping and excavating clean soil from nearby properties.



Comment:

The DRC commented that EPA should consider the safety factors associated with transporting 250,000 cubic yards of soil through the local area and that this issue should have been clearly presented at the public meeting. DRC also stated that they should receive public comment on this issue prior to deciding to require soil cover on the tailings.

Response:

The EPA is aware that there will be some inconvenience associated with the implementation of the recommended removal alternative in the EE/CA. It is also aware of the added burden on the community to have clean cover soil transported to the site. EPA is hopeful that the community will accept this inconvenience as a trade off for having the abandoned mine wastes in their community halted from migrating into their homes and attracting the frequent trespassers in off-road vehicles. EPA contends that the soil cover will off set the necessity of biosolids at the site which will reduce biosolids truck traffic in the local area.

Although EPA did not specifically point out the truck traffic associated with the recommended removal alternative in the EE/CA, the document has been made available to the community for review and it provides the estimates for soil cover volumes.

Comment:

The DRC stated that the recommended removal alternative will take a minimum of two years to complete.

Response:

The EPA has not yet conducted an independent analysis of the time and work force needed to implement the EE/CA, but believes that the time needed to complete the construction is heavily dependent on the size of the work force and equipment dedicated to the project.

Comment:

The DRC commented that private security guards patrolling their abandoned mine waste lands would not be as effective as local law enforcement agencies.

Response:

It has been demonstrated at the BRMTS and Bonne Terre Sites where removal actions have been implemented that local law enforcement agencies are not able to provide the resources necessary to patrol the vast acreages of abandoned mine wastes in their communities. The abandoned mine wastes are an attractive nuisance to ORV users, and the local tax payers should not have to bare the burden of patrolling these waste lands. EPA has granted approval of rock cover on some areas of the mine wastes in an effort to deter ORV trespassing. Once implemented, the recommended removal alternative in the EE/CA will likely deter many trespassers because rock covers and established vegetation will eliminate the barren areas that ORV users and other

trespassers prefer. However, it has been demonstrated at other sites in St. Francois County where similar removal actions have been implemented that additional measures are needed to deter trespassing. EPA believes a security patrol will effectively deter the most persistent trespassers while a thick, persistent, vegetation cover is being established at the site.

**Comment:**

The DRC commented that they will send formal letters to all of the local police forces, the county sheriff, the city prosecuting attorneys, the county prosecuting attorney, the local city governing bodies, and the county commission, informing them of their intent to prosecute all trespassers and asking them to enforce the existing Missouri trespassing laws.

**Response:**

The EPA welcomes this effort to educate the community. The recommended removal alternative has included this type of public education in the appropriate Sections of the EE/CA.

**Comment:**

The DRC commented that they will be placing a four-strand barbwire fence around the site including "No Trespassing" signs and monthly inspections.

**Response:**

The EE/CA identified fencing and signage as some of the administrative controls to be implemented in the recommended removal alternative. However, the EE/CA states that the details of fence design, signage, and barricades will be determined during the development of the Removal Action Work Plan. The frequency of site inspections has not been determined at this time, but the roving site security was intended to be daily and not once per month. The details of the administrative controls will be described in the removal action Work Plan developed for the removal action. Once finalized and approved by EPA, the Removal Action Work Plan will be made available for public viewing at the Site repository.

**Comment:**

The DRC submitted a series of comments pertaining to the covers and reuse of the Site. DRC stated that it is the owner of virtually all of the land to be revegetated and that revegetating tailings without a soil cover is appropriate and effective for lead tailings sites. DRC commented that all slopes, including slopes less than 4 horizontal to 1 vertical should be covered with rock instead of soil because this would act as an additional deterrent to ORV trespassing. DRC stated that creating a fenced wasteland is not the best long-term use of the Site. They commented that the security of the Site depends on the long-term use for the site. DRC commented that it would seek input from various parties including local community and local governments in order to determine what the ultimate land use for the site will be and asked that EPA provide flexibility in considering revitalization of the Site property.

Response:

The DRC has not demonstrated that revegetating tailings without a soil cover is appropriate and effective in establishing a complete, self-regenerating, vegetative cover that prevents the off-site migration of mine waste. This approach will likely provide for very limited land reuse options that will be protective of human health and the environment, unless additional cover material is placed on the mine waste.

Depending on gradation, rock covers for mine waste can be more of a deterrent to ORV trespassing than soil covers. However, rock covers also limit the options for future land use. Although the DRC currently owns the majority of the abandoned mine wastes at the Site, there are no assurances that this land will not be transferred to other parties that will desire some beneficial use from the property in the future.

The DRC's comments state their intent to seek community input on future land use, yet they recently began applying biosolids to areas of the consultation from the local citizens. DRC claims that creating a fenced wasteland is not the best long-term reuse for the Site, yet their preference provided in their comment letter to use more rock cover, no soil cover, biosolids applications, and 4-strand barbed wire fencing around the entire Site appears to do just that. DRC has known for nearly a decade that this removal action was planned, and could have been working with the community to determine the future land use all that time.

The limitations of both the Superfund authority and the nature of the Site limit the removal/stabilization actions that can be taken. EPA's general strategy for removal actions at the abandoned mine waste sites in St. Francois County is to recontour slopes to lesser grades and construct covers to prevent the off-site migration of contaminated material. Soil covers provide for more land reuse options, while rock covers deter ORV trespassing and may require less long-term maintenance. The recommended removal alternative in the EE/CA is a balance of rock and soil covers, re-grading, and security measures that consider effectiveness, implementability, and cost. Overall, the recommended removal alternative does not prevent DRC from taking additional actions at the site to meet community requests for revitalization that go beyond the scope of Superfund authorities.

The EPA has provided a public meeting at Leadwood to present the EE/CA and solicit public comment from community members. EPA's solicitation for public comment on the EE/CA generated an overwhelming community sentiment for action to be taken to stop the blowing of mine waste into the community and provide security measures to stop the trespassing and ORV riding on the Site. These are primary objectives of the recommended removal alternative in the EE/CA.

Comment:

The DRC asked that EPA and the Missouri Department of Natural Resources (MDNR) provide comments on engineering design and analysis under the authority of a Missouri licensed professional engineer (P.E.) and that comment letters be signed and sealed by a Missouri licensed P.E.

Response:

The EPA does not, nor will they, require a Missouri licensed professional engineer to review or seal comments to engineering design and analysis plans prepared by EPA or its representatives. The EPA will not require that MDNR representatives provide comments on engineering design and analysis under the signature and seal of a Missouri licensed professional engineer.

Comment:

The DRC submitted several comments concerning additional landowners at the site and the need for them to be included as potentially responsible parties (PRPs) in future Consent Orders with EPA to implement the EE/CA.

Response:

Comments pertaining to the identification of PRPs are irrelevant to evaluating or selecting a recommended removal alternative for a non-time critical removal action at this Site.

#### **Response to Comments from the Missouri Department of Natural Resources (MDNR)**

Comment:

The MDNR commented that the recommended removal action must result in the improvement of water quality at the outfall effluent water located at the East Seep and Erosion Area and the Dams/Spillway/Conveyance Area. MDNR commented that additional actions must be implemented if the recommended removal alternative in the EE/CA fails to meet outfall effluent water quality standards.

Response:

The EPA agrees with these comments. Section 4.4.6 of the EE/CA indicates that water quality monitoring will be performed following the implementation of the EE/CA. EPA will ensure that a Post Removal Site Control Plan will be developed that includes water quality monitoring at the major water outfalls.

Comment:

The MDNR submitted a series of comments pertaining to the Eaton Creek outfall and tailings downstream of the Leadwood Dam. The MDNR commented that tailings along Eaton Creek recommended for stabilization have the potential to be re-exposed and carried downstream to the Big River and should be removed from the Eaton Creek flood plain and placed upstream of the Eaton Dam as described in Removal Alternative 4.3B. MDNR states that removal alternative 4.3B should be selected instead of alternative 4.3A. MDNR states that removal alternative 4.3B should include the removal of all tailings, contaminated sediment, and flood plain soil in the Eaton Creek valley downstream of Old Highway 8. MDNR commented that the Eaton Creek valley downstream of Old Highway 8 should be restored to baseline conditions and that this action would better achieve removal action objectives and compliance with state water quality ARARs.

Response:

The design and implementation of stabilization measures for the tailings located in the Eaton Creek valley can be constructed in a manner that significantly reduces their potential for migration to the Big River. The EPA will provide MDNR with an opportunity to review and comment on the engineering design for this work as well as all other engineering designs for the selected removal action alternative. The restoration of the Eaton Creek valley downstream of Old Highway 8 is not an objective of this removal action. The objective of this removal action is to stop the off-site migration of mining wastes via surface runoff and wind erosion. As described in the EE/CA, water quality will be evaluated after the construction of the removal action in order to determine if additional actions are needed to meet water quality discharge standards.

Comment:

The MDNR recommended that a lined surface water retention basin or engineered wetland be constructed between the Leadwood Dam and Old Highway 8 if the recommended removal alternative is implemented.

Response:

The EPA does not agree with this recommendation. Post removal monitoring may indicate that water treatment may be needed to remove dissolved metals and/or contaminated sediments from surface water discharges. Additional sampling may be needed to determine if water is seeping from the Leadwood Dam and to design a collection system for transferring potentially contaminated seepage water to a water treatment facility. Surface runoff water and potential seepage water should be evaluated for dissolved metals contamination after the recommended removal alternative has been constructed. If post removal water monitoring indicates that the treatment of discharge water is needed, treatment systems/wetlands can more effectively be located and designed at this time, instead of constructing a sedimentation basin as part of this removal action.

Comment:

The MDNR commented that the data generated for the EE/CA is insufficient to characterize the off-pile mine waste contamination that has migrated east of Davis Crossing Road via surface runoff from the East Seep and Erosion Area.

Response:

The EPA agrees that only limited data was generated for this area of concern. The area upstream of the pond dam on the Hall property located east of Davis Crossing Road will be included in the Site boundary. Tailings on the Hall property east of Davis Crossing Road will be characterized, removed, and consolidated with tailings on the west side of Davis Crossing Road, upstream of Eaton Dam. The exact location of consolidation will be delineated in the Removal Action Work Plan.

Comment:

The MDNR recommended that a surface water retention basin/or other effluent treatment be constructed upstream of Davis Crossing Road for the surface water discharge at the East Seep and Erosion Area.

Response: Post Removal monitoring will be conducted to determine the necessity and design of treatment for water being discharged from the East Seep and Erosion Area. A water treatment basin and other potential treatment facilities can be better designed and sited after the removal action is complete and post-removal monitoring data provides a more accurate picture of potential water contaminant levels.

Comment:

The MDNR commented that the effluent from the discharges at the Leadwood Dam and East Seep and Erosion Area will require monitoring during the removal action and after the removal action is completed.

Response:

The EPA agrees that post removal monitoring of surface water discharges is necessary at the Leadwood Dam and East Seep and Erosion Area outfalls. This monitoring will be required and detailed as part of the Removal Action Work Plan and Post Removal Site Control Plan. EPA does not agree that surface water discharge monitoring during the implementation of the removal action is practical. One of the benefits of the recommended removal alternative in the EE/CA is to improve surface water quality discharging from the Site. Therefore, it is not practical to monitor surface water quality in surface water discharges prior to the completion of the action intended to improve surface water quality when this data already exists. The MDNR has not required any substantive monitoring or treatment of Site discharges by the past or present mining company/site owners, even though records indicate MDNR has been aware of adverse impacts to the Big River due to mine waste runoff in St. Francois County since 1980.

Comment:

The MDNR commented that the chat pile should be lowered to a similar elevation as the Eaton Dam, be constructed with 4 horizontal to 1 vertical slopes, and be covered with soil and vegetation instead of the chat pile specifications recommended in the EE/CA.

Response:

The EPA must evaluate non-time critical removal action alternatives in relation to effectiveness, implementability, and cost. The steeper slopes and rock cover described in the recommended removal alternative have been demonstrated thus far to be effective in meeting removal action objectives at the Desloge Mine Tailings Pile and the Bonne Terre Mine Tailings Pile. The construction standards proposed by MDNR are also inconsistent with the dam stabilization actions previously implemented at the St. Joe State Park by the state of Missouri and other PRPs.

Comment:

The MDNR commented that the Sugar Bowl should be filled in sufficiently to prevent water ponding and facilitate controlled runoff of stormwater.

Response:

The EPA agrees.

Comment:

The MDNR commented that the EE/CA does not provide sufficient detail to adequately describe the surface drainage controls on the west side of the site between Wortham Road and Eaton Dam.

Response:

The EE/CA is intended to provide a conceptual design and approach for the drainage controls. The engineering design and Removal Action Work Plan will provide the details the MDNR is seeking. The MDNR will be provided a copy of the engineering design and afforded the opportunity to comment on the drainage details in question.

Comment:

The MDNR commented that it would be beneficial to consolidate mine and mill wastes found at the Southern Mine Shaft Area to the Sugar Bowl instead of stabilizing these materials at their current location.

Response:

The Southern Mine Shaft Area is located within the Site boundaries, and the cost associated with additional consolidation of these wastes in the Sugar Bowl does not result in significant gains in the removal action effectiveness. Therefore, EPA will not implement this recommendation.

Comment:

The MDNR commented that the wind erosion of the tailings dams has been an ongoing problem at the site and that the recommended removal alternative should address this issue.

Response:

The EPA agrees. The EE/CA provided somewhat contradictory response actions for the downstream side of Eaton Dam. For clarification, the recommended removal alternative will include a minimum 12-inch rock cover on all of the downstream side (north) of Eaton Dam. A similar rock cover will also be placed on all barren surfaces of the downstream side of Leadwood Dam where a cover material currently does not exist. The EE/CA describes the placement of rock cover only on areas with grades steeper than 4 horizontal to 1 vertical. Rock cover is being recommended for the downstream dam faces, whose slopes are 5 horizontal to 1 vertical, for three reasons. First, the extensive length of the downstream Eaton Dam face would necessitate

the need for costly benching if soil cover were utilized. This benching, or terracing, is needed in order to control erosion due to surface runoff velocities. An engineered rock cover would not require benching as it would allow for the majority of surface runoff to percolate through the cover, thereby reducing erosion potential; Second, the rock cover will require less maintenance and provide cover objectives as soon as placement is completed; And third, the rock cover will provide a significantly better deterrent for off-road vehicle trespassing than a soil cover.

**Comment:**

The MDNR commented that the recommended removal alternative does not provide for restoration of Natural Resources as required by 43 CFR Part 11.

**Response:**

43CFR Part 11 supplements the NCP process and provides natural resource trustees a process in which they can consider natural resource damages that are not addressed by response actions. The implementation of the recommended removal alternative does not preclude Natural Resource Trustees from seeking restoration of potential NRD in the future. The Natural Resource Damage Trustees have been aware of the potential adverse impacts to Natural Resources in St. Francois County since the 1980s. Trustees have participated in a Biological Technical Assistance Group concerning this and other mine waste piles that impact the Big River water shed since 1995. MDNR has been provided the opportunity to participate in negotiations with potentially responsible parties (PRPs) in conducting removal/stabilization actions at other mine waste piles in St. Francois County.

**Response to Comments and Questions From the February 28, 2006 Public Meeting**

**Question:**

Several citizens asked questions concerning schedules for the removal action and how long until construction would begin.

**Response:**

If the EE/CA does not have to be revised and released for public comment again, the EE/CA could be finalized in one to three months. Reaching an agreement with potentially responsible parties to implement the EE/CA is estimated to take three to six months. An additional three to four months will be needed to develop and approve a detailed engineering design and Work Plan. Construction can generally begin within three months of approval of the Work Plan.

**Question:**

A commenter asked why the mine waste could not be put back underground.

**Response:**

The lead remaining in the mine waste becomes oxidized over time and changes into a lead form that can potentially leach when in contact with water. Placing mine waste back into the mines and in contact with groundwater could potentially contaminate the groundwater aquifer which is



used as a drinking water supply for many people in the region. In addition, Missouri state regulations prohibit the underground disposal of waste at depths below the groundwater table.

**Comment:**

Citizens provided a number of comments and questions concerning the application of biosolids on the Site. They were concerned with potential groundwater contamination due to this activity. They complained about night applications, truck valves leaking sludge on the roadways, and tanker trucks parking in the middle of the street. The question was asked why biosolids were applied to the Site prior to implementing a removal action designed to control surface runoff.

**Response:**

The amount of sludge being land applied at the Site is an agronomic rate that has not been shown to adversely impact groundwater. January and February 2006 sampling results did not detect any fecal coliform bacteria in the groundwater supplied to Wortham residents. Potential for runoff of sludge from the Site would be minimal because of the application rate. The tailings are porous and the biosolids would quickly wick into the upper ground surface thereby reducing the likelihood of significant surface runoff in a rainfall event. The EPA has followed up with Doe Run and requested that the sludge application be conducted in a manner that is more considerate of the nearby population in Wortham, Missouri.

**Comment:**

Citizens provided numerous complaints about the lack of security, ORV riding, and the trespassing that frequently occurs at the Site.

**Response:**

The EPA is also concerned about the activities that trespassers engage in at the Site. The recommended removal alternative in the EE/CA includes significant administrative controls to deter trespassing. The controls include locked gates at access roads, fencing, no trespassing signage, and roaming security personnel. EPA believes that these measures, in addition to ground cover, will deter much of the trespassing activity at the Site.

**Comment:**

One citizen inquired why a blacktop plant could not be set up at the site.

**Response:**

The owners of the Site, The Doe Run Company, have the right to set up an asphalt plant to produce asphalt in accordance with state and local regulation. It is EPA understands that only a minimal amount of chat is available for asphalt production, and that the tailings at the site are not suitable for this use. Therefore, the majority of the Site will need to be stabilized and covered, regardless of the potential for asphalt production. The removal action being conducted at the Elvins Mine Tailings Site requires that the chat pile be stabilized and covered, until it is

eventually used in the production of asphalt. Stabilization and covering of the chat pile would also need to occur at the Leadwood Site in order to prevent its off-site migration prior to being utilized in the making of asphalt.

**Comment:**

One citizen commented that the recommended removal alternative will threaten groundwater in the area.

**Response:**

The EPA believes there is the potential for groundwater to be impacted by the mine wastes in their current condition. However, data collected thus far indicates that the groundwater has not been significantly impacted by the leaching of metals from the piles. EPA believes that the stabilization and covers included in the recommended removal alternative will more readily drain surface runoff from the Site and thereby reduce percolation and potential leaching of metals into the groundwater. Future remedial actions are planned for the site that are intended to address any remaining threats to groundwater.

**Comment:**

One citizen asked why air monitoring is not being conducted around the Site.

**Response:**

The EPA has required air monitoring during the implementation of stabilization removal actions at similar mine waste sites in St. Francois County, and will require perimeter air monitoring during the implementation of removal actions taken at the Leadwood Mine Tailings Site. Although EPA is not currently monitoring the tailings emissions from the Leadwood Site, they are aware of this problem and are pursuing a removal alternative to stop the air migration of mine waste into the surrounding communities.

**Comment:**

Several citizens commented and complained about the dumping of cars and trash on the tailings flats near the town of Wortham.

**Response:**

Debris dumped on the Site will either be buried on Site or disposed of off Site as part of the recommended removal alternative.

**Comment:**

One citizen commented that The Doe Run Company has known for years that the mine waste blows into the community and asked why they have not done anything about it before now:

Response:

The EPA agrees that The Doe Run Company has been aware of the mine waste at the Site migrating off site and into the community for many years. The EPA does not know the reasons why The Doe Run Company has not taken action to address their mine wastes abandoned at the Site.

Comment:

Several citizens commented about having lived near and played in the mine waste for most of their lives, and inquired about the health effects of this exposure.

Response:

Over the past 35 years much has been learned about the health effects of exposure to lead. While some individuals may have been around lead mining waste during their entire life and not had their health adversely impacted, others may not have been as fortunate. Lead poses the most risk to children less than 84 months old, including during gestation. Many variables play into exposure to and adverse health impacts from lead. Home cleanliness, diet, and individual child behavior all play a significant role in a child's lead ingestion rate and subsequent health impacts. The removal actions proposed in the EE/CA and implemented at other mine waste piles in St. Francois County are designed to reduce the spread of lead contamination and the potential for ingestion of lead-contaminated mining wastes. In children, lead can cause adverse health effects that include slowed physical growth, hearing problems, learning difficulties, behavioral problems, and decreased intelligence.

Comment:

One commenter asked if the recommended removal alternative included spraying pesticides for mosquito control.

Response:

The recommended removal alternative does not include the direct control of mosquitoes or other insects.

Comment:

One commenter asked if residential yards were going to be dug up due to the mine waste blowing into them.

Response:

Lead-contaminated surface soil in residential yards in close proximity to the abandoned mine waste piles and historical smelters is currently being replaced. Under consensual Orders with the EPA, the DRC has been replacing lead-contaminated surface soils with clean soil at a rate of approximately 60 properties per year. Future remedial actions are planned for the area intended to complete the removal of lead-contaminated surface soil exceeding site action levels from residential properties located in the towns surrounding the mine waste piles.

**Comment:**

One citizen asked if EPA was going to force property owners to have their yard soil replaced if it is contaminated with lead.

**Response:**

The EPA does not typically force resident owners to have their lead-contaminated yard soils replaced and currently does not have plans to do that at this Site. The EPA recommends that residential land owners have their yard soils replaced where lead levels exceed site action levels because this action will reduce the threat of lead exposure for occupants and adjacent neighbors in the community. This action will also increase the value of the property and facilitate the ease of future property transference. EPA typically will require residents to have their surface soil sampled for lead levels, and the law requires that this data be provided to all prospective purchasers of the property.

**Comment:**

One commenter stated that he lived close to the Site, had a two and a four year old child, and requested that his yard be sampled and that he receive a vacuum cleaner.

**Response:**

The EPA has followed up on this request and DRC has agreed to sample the yard and provide a vacuum to this resident.

## **APPENDIX C**

## 4.0 Identification and Analysis of Removal Action Alternatives

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As outlined in the *Work Plan and Field Sampling Plan* (Barr, 2001), there are several technologies that may be incorporated into a final remedy for the site. They are:

- Slope stabilization
- Surface stabilization
- Drainage and sediment controls
- Grading
- Administrative controls

Each technology has advantages and disadvantages, and it is likely that a combination of these technologies will be needed to meet the removal action objectives for the entire site. Considering this information, the following removal action alternatives have been developed:

- Alternative 1 No Action
- Alternative 2 Administrative Controls Only
- Alternative 3 Modified Stormwater Pollution Prevention Plan, Control of Wind Erosion
- Alternative 4 Other Alternatives Specific to Sub-Areas of the Site

The alternatives were evaluated for their applicability for implementation. The following sections describe the alternatives as they may be implemented at each of the site sub-areas. Total costs for the alternatives are compared in Table 5. The recommended alternative, which combines Alternatives 3 and 4, is shown on Figure 8 and Figure 9.

### 4.1 Alternative 1—No Action

Alternative 1 is the no-action alternative required for analysis as stated in the USEPA Guidance on Conducting Non-Time-Critical Removal Actions Under CERCLA, August 1993 (USEPA, 1993a). The purpose of the no-action alternative is to act as a baseline condition for comparing the effectiveness of the various other alternatives. There are no issues with implementation, and there are no capital or operation and maintenance (O & M) costs to consider. The no-action alternative

would not provide any additional protection of public health and the environment and the risk would be the same as the existing conditions. The no-action alternative would not prevent wind erosion. Suspended particulate and contaminants in the surface water runoff would continue to drain towards the Big River.

Because this alternative would not meet removal action objectives and would not be protective of human health and the environment, Alternative 1 was eliminated from further consideration.

## **4.2 Alternative 2—Administrative Controls**

Alternative 2 is the implementation of administrative controls for the site. Administrative controls may include some or all of the following: deed restrictions on the property, warning signs and purple paint to identify that the site is private property, barrier fences and gates to inhibit trespassing, full or part-time surveillance to prevent trespassing, and air and surface water monitoring.

Administrative controls are also included as part of the various action alternatives. Administrative controls only (Alternative 2) includes a minimum of a six-foot chain-link fence, daytime surveillance including O & M for fence repairs, gated roadway entrances, and land-use controls (Institutional Controls or IC's) for the property. Specific IC's will be determined and described in the Removal Action Work Plan that will apply to Alternative 2 if that alternative is the chosen alternative. Both the administrative controls only and the action alternatives include the cost of long-term air and water monitoring.

The cost for completing Alternative 2 is approximately \$1,359,296. This cost is described in more detail in Table 5 and Appendix F.

## **4.3 Alternative 3—Modified Stormwater Pollution Prevention Plan, Control of Wind Erosion**

Alternative 3 includes implementation of the modified stormwater pollution prevention plan for the site. The goal of this plan is to reduce the amount of material migrating offsite through soil erosion utilizing a minimal amount of material movement and construction. Wind erosion must also be controlled since dust from the site reaching adjacent areas can be carried in runoff from those areas. Alternative 3, which is part of the recommended combination of alternatives, is shown on Figure 8 and Figure 9.

The original stormwater pollution prevention plan (Barr, 1998) for this site included 11 stormwater control structures. These structures were to be constructed to provide time for suspended particulates to settle out and redirect the stormwater flow to reduce its velocity and resulting erosion. As part of this EE/CA, a more detailed evaluation of the original stormwater pollution prevention plan was completed. This evaluation utilized a two-foot contour map, not available during the preparation of the original stormwater pollution prevention plan, to determine the best location for the stormwater control structures. During that evaluation, it was determined that the objectives of the original stormwater pollution prevention plan could be met with a modified approach that minimized the number of stormwater control structures.

As part of the modified stormwater pollution prevention plan, a stormwater control structure is to be constructed directly upstream of Wortham Road (Figure E-1, Appendix E). This structure, approximately 1,300 feet in length, will be located parallel to the road and will span the area between the ridges on eastern and western sides of the Tailings Area. This structure will be sized to retain the 100-year 24-hour storm event for the 530-acre watershed south of Wortham Road. This structure will be constructed of tailings and chat and will be covered with a minimum of 12 inches of graded rock to minimize erosion. Optimum rock grading will be determined and described in the Removal Action Work Plan.

The outlet will consist of a culvert through the structure and Wortham Road with a perforated vertical riser on the upstream end of the structure. This riser will be constructed to an elevation that will allow for ponding upstream of the stormwater control structure during storm events and immediately following these events. This structure will be designed so that no significant amount of water is retained upstream of the stormwater control structure following the slow release of the stormwater that was retained as a result of a storm event. The outlet will discharge stormwater to the downstream side of Wortham Road into a swale that will be constructed to channel the stormwater to the west where it will be discharged into the stream channel that meanders along the western side of the Tailings Area. The grade work on this swale, as well as any work needed on the stream channel, will be completed during construction of the stormwater control structure. Upon completion of the regrading activities, a minimum of 12 inches of graded rock will be placed on the swale and the stream channel to minimize the potential for erosion. Optimum rock grading will be determined and described in the Removal Action Work Plan.

As a part of the modified stormwater pollution prevention plan, the Eaton Dam outlet structure will be modified. This modification will be to construct a perforated vertical riser on the intake of the



outlet structure. This perforated riser will be constructed on the existing apron of the outlet structure and will raise the intake of the structure approximately 8 feet to Elevation 836. During significant storm events and immediately following these events, water will be retained over the large flat tailings delta on the western side of the Tailings Area. However, this riser will be designed so that no significant amount of water is retained upstream of Eaton Dam following the slow release of the stormwater that was retained as a result of a storm event. This temporary water retention will reduce the velocity of the water flowing through this area thereby minimizing the resulting erosion.

The modified stormwater pollution prevention plan also addresses discharge from the East Seep and Erosion Area. This portion of the modified stormwater pollution prevention plan includes the refurbishment of the decant tower that was used to dewater the tailings in this area. Refurbishment will include reconstructing the lower few feet of the inlet above the existing ground surface. This will allow for water to temporarily pond around the structure, which will reduce the velocity of the water flowing through the area and allow for the settlement of suspended solids prior to the water being discharged from the site. Refurbishment efforts will be completed so that no significant amount of water is retained following the slow release of the stormwater that was retained as a result of a storm event.

The modified stormwater pollution prevention plan for the East Seep and Erosion Area also raises the crest of the eastern tailings slope to approximately Elevation 859.0. This work will be completed by maintaining the current crest location or relocating the crest to the east and increasing the slope gradient of the upper portion of the existing slope to approximately 3 horizontal to 1 vertical. The increased crest elevation is necessary to provide enough storage with an appropriate freeboard for the 75% Probable Maximum Precipitation (PMP) event. The increased crest elevation will also eliminate the overtopping of the crest occurring under current conditions that has caused erosion gullies in the outer slope. Maintaining the current crest location or relocating it to the east where possible is necessary so that the existing decant structure can continue to be utilized. Maintaining the current crest location or relocating it to the east will also make it possible to buttress the soft layers of material in the upper portion of the slope.

Following the completion of the work on this slope, a minimum of 12 inches of graded rock will be placed to prevent erosion from occurring. Optimum rock grading will be determined and described in the Removal Action Work Plan. To prevent overtopping of the raised crest, an emergency spillway will be constructed on the southeastern side of the East Seep and Erosion Area. This spillway will be constructed at approximately Elevation 857.0 into the natural ground. The spillway

will outlet into the small watershed to the south. Water from this drainage basin rejoins the water being discharged from the East Seep and Erosion Area in the unnamed tributary to the Big River on the eastern side of Davis Crossing. Raising the crest and constructing the spillway will allow for the detention of 75 percent of the Probable Maximum Precipitation (PMP) event.

Alternative 3 will also address the completion of grading activities at the former mine and mill facilities. Grading activities at the former mill facility will focus on the portion of this area not covered with soil. The portion of this area that is covered with soil will not be addressed as part of the removal action activities as this area is being addressed as part of the yard soil investigation and cleanup activities. Following the completion of the demolition activities described in Section 4.4.4, the portion of the mill facility not covered with soil will be regraded to drain away from the remaining buildings towards the site. Grading will generally be to the north and west, and will be completed to match into the grading activities completed on the portions of the site adjacent to this area. Upon the completion of grading activities, this area will be covered with rock or soil as described below.

Grading activities at the former mine facility will focus on regrading the area following the completion of activities in the area. These activities will include the demolition of the remaining structures as described in Section 4.4.4, the excavation of the chat from the remnants of the railroad grade for construction materials, and the excavation of the remaining portion of the shaft rock stockpile for cover materials. Upon the completion of these activities, the area will be regraded to match into the natural ground contours surrounding this area. Once grading activities have been completed, this area will be covered with rock or soil as described below.

In addition to the modified stormwater pollution prevention plan, Alternative 3 also addresses the issue of controlling wind erosion. This will be completed through the placement of a minimum of 12 inches of graded rock cover on areas where slope gradients are steeper than 4 horizontal to 1 vertical (4H:1V). Optimum rock grading will be determined and described in the Removal Action Work Plan. This will include the Chat Pile Area as well as the upstream face of Eaton Dam east of the discharge structure. The rock used for slope protection will be selected for limited amounts of fine fractions in an effort to discourage weed growth and promote vertical infiltration.

All areas around the site not covered with a minimum of 12 inches of graded rock will be vegetated. Vegetation will be established on areas where minimal vegetation exists and augmented where sparse vegetation exists that does not meet ARARs. Vegetation activities on areas where minimal

vegetation exists will consist of a minimum of six inches of soil placed prior to seeding. The seed mix and fertilizer will be identified in the Removal Action Work Plan and be consistent with ARARs. However, if The Doe Run Company can design and demonstrate an alternative vegetation strategy that can establish a vegetative cover that will meet ARARs within three years, Doe Run may implement this strategy, pending EPA approval. Areas where sparse vegetation is present will be augmented with seeding and fertilization with the intent of meeting ARARs. Procedures for establishing vegetation as well as inspection and maintenance of the vegetated cover will be detailed in the Removal Action Work Plan. The requirements of Alternative 3 were developed with a minimum amount of material movement. It is also designed to be compatible with the other sub-area specific alternatives discussed under Alternative 4. The recommended combination of alternatives is shown on Figure 8 and Figure 9.

The approximate cost of completing Alternative 3 is \$4,977,960. This cost is described in more detail in Table 5 and Appendix F.

## **4.4 Other Alternatives**

These alternatives are relevant to specific portions of the site and could be added to or subtracted from Alternative 3 as appropriate.

### **4.4.1 Alternative 4.1—Regrading the Chat Pile Area**

This alternative is a combination of Alternative 4 (Minimum Use of Chat Pile Material) and Alternative 5 (Maximum Chat Pile Reduction) for the Chat Pile Area from the work plan (Barr, 2001). This alternative incorporates the concepts of placing the slimes from the slimes area into the sugar bowl with regrading the chat pile to have slope grades of approximately 3 horizontal to 1 vertical. This alternative is shown in Figure 9.

The Chat Pile Area, located between Eaton Dam and the former mill facility, consists of the main chat pile, the slimes area, and the sugar bowl. This alternative excavates the slimes area to match into the surrounding grade of the Tailings Area. The material excavated from the slimes area is placed into the sugar bowl via dozing or truck hauling. Following the excavation of the slimes, chat would be placed over the slimes area to cover any areas where soft material might still remain and be a hazard for vehicles driving over the area. Following grading activities, the top and sideslopes of the main chat pile will be covered with a minimum of 12 inches of graded rock. Optimum rock grading will be determined and described in the Removal Action Work Plan. The portions of the

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Chat Pile Area not covered with rock will be covered with a minimum of six inches of soil and seeded for establishment of vegetation designed to meet ARARs. However, if The Doe Run Company can design and demonstrate an alternative vegetation strategy that can establish a vegetative cover that will meet ARARs within three years, Doe Run may implement this alternative vegetation strategy, pending EPA approval.

An inspection of the sugar bowl during the physical features investigation of the site revealed steep sideslopes made of chat on the north, east, and west sides and slimes on the south side. These slopes are as steep as 1 horizontal to 1 vertical and will be regraded to a gradient of 3 horizontal to 1 vertical. The regrading of the southern slope will take place as part of the removal of slimes from the slimes area. Regrading of the other slopes will be completed as part of the regrading efforts to be completed on the chat pile. The material placed in the sugar bowl will be covered with a minimum of three feet of chat from the main chat pile. The thickness of this layer may be increased depending on the "softness" of the material being placed in the sugar bowl and how difficult it is to work with. Additional material may also be placed in the sugar bowl to make sure that no water ponds in this area as well as to assist with regrading the area to drain towards the ponding area between Leadwood Dam and Eaton Dam.

The main chat pile currently has slopes as steep as 1.5 horizontal to 1 vertical. This alternative reduces the outer slopes of the pile to 3 horizontal to 1 vertical to allow the placement of a minimum of 12 inches of graded rock slope protection on the top and sideslopes for wind erosion control. The rock used for slope protection will be selected for limited amounts of fine fractions in an effort to discourage weed growth and promote vertical infiltration. Optimum rock grading will be determined and described in the Removal Action Work Plan. Runoff from the chat pile is assumed not to occur because of the high infiltration capacity of the relatively coarse chat material.

To obtain fill for use elsewhere, the top elevation may need to be lowered as much as 30 feet. This will bring the main chat pile to approximately 10 feet higher than the crest of Eaton Dam. To minimize excavation of the pile when cutting back the slope, the eastern toe of the pile may be extended eastward towards the sugar bowl.

The approximate cost of completing Alternative 4.1 is \$864,930. This cost is described in more detail in Table 5 and Appendix F.

#### **4.4.2 Alternative 4.2—Surface Stabilization and Grading in the Tailings Area**

This option provides for a minimal amount of grading and surface stabilization to reduce the potential for tailings and chat to be washed or blown offsite. This work will be completed on areas where steep slopes or excessive erosion have occurred. These areas have the potential for additional erosion and are difficult to vegetate. Where areas such as this have occurred, regrading activities will be completed to flatten these slopes to a grade of 4 horizontal to 1 vertical or less. Upon the completion of regrading activities, these areas will be covered with a minimum of six inches of soil and seeded for establishment of vegetation designed to meet ARARs. However, if The Doe Run Company can design and demonstrate an alternate vegetation strategy that can establish a vegetative cover that will meet ARARs within three years, Doe Run may implement this alternative vegetation strategy, pending EPA approval.

The approximate cost of completing Alternative 4.2 is \$161,700. This cost is described in more detail in Table 5 and Appendix F.

#### **4.4.3A Alternative 4.3A—Stabilization and Removal of Eaton Creek Tailings**

This sub-alternative is a combination of Alternative 5 (Removal of Tailings from Eaton Branch Floodplain) and Alternative 6 (Stabilization of Tailings in Eaton Branch Floodplain) for the Dams/Spillway/Conveyance Area from the work plan (Barr, 2001) and will address a combination of removal and stabilization of the tailings in the Eaton Creek floodplain.

Stabilization of the tailings in Eaton Creek will occur in the portion of the creek between the Leadwood Dam and Highway 8. This section of the Eaton Creek floodplain is approximately 500 feet wide at the base of Leadwood Dam and 300 feet wide at Highway 8. The floodplain is covered with tailings deposits that are estimated to be 5 to 15 feet thick. Work in this section of Eaton Creek will pull back the tailings adjacent to the stream channel and remove any tailings from the current stream channel. Efforts will be made to minimize the amount of disturbance of the existing stream channel. However, the final location of this channel may be slightly modified depending on the contours of the natural ground below the tailings adjacent to the current stream channel. The excavated tailings will be placed on the tailings that will be left in place in the flood plain. These tailings will be graded to drain towards Eaton Creek. Areas where removal is completed along the

stream channel will be graded to have a gradient of 4 horizontal to 1 vertical. All of the tailings left in place in the Eaton Creek flood plain will be covered with a minimum of six inches of soil following grading activities. The portion of these areas with a gradient of 4 horizontal to 1 vertical or steeper will also be covered with a minimum of 12 inches of graded rock following the placement of soil. Optimum rock grading will be determined and described in the Removal Action Work Plan. Areas that have a gradient flatter than 4 horizontal to 1 vertical will be seeded for establishment of vegetation designed to meet ARARs following the placement of soil. However, if Doe Run can design and demonstrate an alternate vegetation strategy that can establish a vegetative cover that will meet ARARs within three years, Doe Run may implement this alternative vegetation strategy, pending EPA approval.

Removal of tailings from Eaton Creek will occur in the portion of the creek between Highway 8 and the Big River. This section of the floodplain is approximately 150 feet wide on the downstream side of Highway 8 and 50 feet wide at the confluence of the creek with Big River. During the physical investigation, tailings were only observed from Highway 8 to the county road located approximately halfway between Highway 8 and the Big River. It is estimated that the tailings deposits in this section of Eaton Creek are less than 10 feet thick. Work in this section of Eaton Creek will remove the tailings adjacent to the creek channel, as well as in the current stream channel. Efforts will be made to minimize disturbance of the existing stream channel. However, the final location of this channel may be modified depending on the contours of the natural ground below the tailings adjacent to the current stream channel. The tailings removed from this section of Eaton Creek will be placed upstream of Leadwood Dam. Areas where removal is completed that have a gradient of 4 horizontal to 1 vertical or steeper will be covered with a minimum of 12 inches of graded rock. Optimum rock grading will be determined and described in the Removal Action Work Plan. Areas where removal is completed that have a gradient flatter than 4 horizontal to 1 vertical will be covered with a minimum of six inches of soil as needed and seeded for establishment of vegetation designed to meet ARARs. However, if The Doe Run Company can design and demonstrate an alternate vegetation strategy that can establish a vegetative cover that will meet ARARs within three years, Doe Run may implement this alternative vegetation strategy, pending EPA approval.

During the physical features investigation, no tailings were visually identified in the section of Eaton Creek between the county road and the Big River. Therefore, no removal or stabilization activities are planned for this area.

The approximate cost of completing Alternative 4.3 is \$1,398,540. This cost is described in more detail in Table 5 and Appendix F.

#### **4.4.3B Alternative 4.3B—Removal of Eaton Creek Tailings**

This sub-alternative is Alternative 5 (Removal of Tailings from Eaton Branch Floodplain) for the Dams/Spillway/Conveyance Area from the work plan (Barr, 2001) and will address removal of the tailings in the Eaton Creek floodplain.

Removal of the tailings in Eaton Creek will occur in the portion of the creek between the Leadwood Dam and Highway 8. This section of the Eaton Creek floodplain is approximately 500 feet wide at the base of Leadwood Dam and 300 feet wide at Highway 8. The floodplain is covered with tailings deposits that are estimated to be 5 to 15 feet thick. Work in this section of Eaton Creek will remove the tailings adjacent to the stream channel as well as in the current stream channel. Efforts will be made to minimize the amount of disturbance of the existing stream channel. However, the final location of this channel may be modified depending on the contours of the natural ground below the tailings adjacent to the current stream channel. The tailings removed from this section of Eaton Creek will be placed upstream of Leadwood Dam. Areas where removal is completed that have a gradient of 4 horizontal to 1 vertical or steeper will be covered with a minimum of 12 inches of graded rock. Optimum rock grading will be determined and described in the Removal Action Work Plan. Areas where removal is completed that have a gradient that is flatter than 4 horizontal to 1 vertical will be covered with a minimum of six inches of soil as needed and seeded for establishment of vegetation designed to meet ARARs. However, if Doe Run can design and demonstrate an alternate vegetation strategy that can establish a vegetative cover that will meet ARARs within three years, Doe Run may implement this alternative vegetation strategy, pending EPA approval.

Removal of tailings from Eaton Creek will also occur in the portion of the creek between Highway 8 and the Big River. This section of the floodplain is approximately 150 feet wide on the downstream side of Highway 8 and 50 feet wide at the confluence of the creek with Big River. During the physical investigation, tailings were only observed from Highway 8 to the county road located approximately halfway between Highway 8 and the Big River. It is estimated that the tailings deposits in this area are less than 10 feet thick. Work in this section of Eaton Creek will remove the tailings adjacent to the creek channel, as well as in the current stream channel. Efforts will be made to minimize disturbance of the existing stream channel. However, the final location of this channel may be modified depending on the contours of the natural ground below the tailings adjacent to the current stream channel. The tailings removed from this section of Eaton Creek will be placed

upstream of Leadwood Dam. Areas where removal is completed that have a gradient of 4 horizontal to 1 vertical or steeper will be covered with a minimum of 12 inches of graded rock. Optimum rock grading will be determined and described in the Removal Action Work Plan. Areas where removal is completed that have a gradient flatter than 4 horizontal to 1 vertical will be covered with a minimum of six inches of soil as needed and seeded for establishment of vegetation designed to meet ARARs. However, if The Doe Run Company can design and demonstrate an alternate vegetation strategy that can establish a vegetative cover that will meet ARARs within three years, Doe Run may implement this alternative vegetation strategy, pending EPA approval.

During the physical features investigation, no tailings were visually identified in the section of Eaton Creek between the county road and the Big River. Therefore, no removal or stabilization activities are planned for this area.

The approximate cost of completing Alternative 4.3 is \$2,957,480. This cost is described in more detail in Table 5 and Appendix F.

#### **4.4.4 Alternative 4.4—Demolish Decant Tower and Old Mine Buildings**

Throughout the Leadwood Site there are remnants of the former mining and milling facilities. This includes two buildings and several foundations from the milling facility, portions of structures at the southern mine shaft facility, drop structures and outlets from the onsite dewatering system, and two closed mine shafts. All of these structures are accessible to the local residents and present potential safety issues.

The two buildings at the old milling facility are located on property that is currently owned by a private party. This person uses these buildings as a residence and storage shed. Currently there are no plans to change the use of these buildings. The dewatering tower and outlet pipe in the East Seep and Erosion Area is also still an active feature of the site. This system still collects surface water from the surrounding water shed and discharges the water to the east beyond the main area of tailings deposition. This system will be utilized as part of the modified stormwater pollution prevention plan (Alternative 3) following some minor refurbishing to the decant tower. Other structures to be left in place are the two decant towers identified during the physical features investigation between the sugar bowl and the East Seep and Erosion Area and in the Tailings Area south of the slimes area.

The remainder of the onsite structures will be demolished in place and covered where possible.

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Where in-place disposal is not possible, the demolition debris will be taken to the disposal area



potentially located in the sugar bowl. Due to the potential need to place demolition debris in the sugar bowl, work on this alternative would need to be completed prior to the completion of Alternative 4.1, Regrading the Chat Pile Area. Details of the demolition of surface facilities will be included in the plans and specifications for the removal action.

Identification of mine shafts in the region is an ongoing activity by Doe Run. Two shafts were identified during the onsite investigation in April and May. Visual inspection of the seal for these shafts found them to still be in place. No new shafts were encountered during the physical features investigation of the site. However, it is known that there are other shafts at the site that have not been located. If any additional shafts are identified on the site, they will be added to Figure 2. Details of shaft plugging, if necessary, will be included in the plans and specifications for the removal action.

The approximate cost of completing Alternative 4.4 is \$113,520. This cost is described in more detail in Table 5 and Appendix F.

#### **4.4.5 Alternative 4.5—Redirect East Seep and Erosion Area Decant Discharge**

This alternative was included as Alternative 4 (Redirect Decant System Discharge) for the East Seep and Erosion Area in the work plan (Barr, 2001) to evaluate the potential for redirecting the surface flow away from the decant system in the East Seep and Erosion Area towards the Tailings Area. The evaluation of this alternative concluded that the best way to accomplish this task would be to construct a surface swale between the two areas. The upstream end of this spillway would be located near the decant tower in the East Seep and Erosion Area. This swale would progress to the west through the ridge of tailings, and most likely the natural ground that separates the East Seep and Erosion Area from the Tailings Area. This swale would have a relatively flat slope and be covered with a minimum of 12 inches of graded rock protection to minimize the amount of erosion. This swale will eliminate surface water flow to the decant structure. However, this swale will not eliminate the seepage discharging from the toe of the eastern tailings slope. It is estimated that this swale would need to be approximately 3,000 feet long and would require that approximately 340,000 cubic yards of tailings be excavated and redistributed around the site. The estimated cost of constructing this swale would be \$828,300. Since it is feasible to continue to utilize the existing decant tower and outlet in the East Seep and Erosion Area at significantly less cost (approximately \$5,000), it has been determined that this alternative would be poor use of resources. At this time no further evaluation of this alternative is planned.

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#### **4.4.6 Alternative 4.6—Treatment Ponds**

This alternative is a combination of Alternative 4 (Treatment Ponds) for the Dams/Spillway/Conveyance Area and Alternative 5 (Treatment Pond) for the East Seep and Erosion Area from the work plan (Barr, 2001). This alternative proposes to construct detention ponds in these two areas for the purpose of treating the water being discharged from the site. The treatment ponds would be designed specifically to lower the concentrations of metals, including zinc, in the discharge water. Treatment technologies may include biological, physical, and chemical means. If biological means are used, plants known to aid in the removal of metals and particulate will be planted in the ponds. The treatment ponds would be fairly complex and would need to be sized based on the removal of zinc, which is removed by sulfate reduction under anaerobic conditions resulting in the precipitation of insoluble metal sulfide. This alternative would be based on water quality samples of the water discharging from the site following successful implementation of the recommended alternative. Further evaluation of this alternative will be completed following the implementation of the Removal Action Work Plan. This evaluation will be based on the NPDES permitting requirements for the site and water quality samples taken following the completion of the recommended removal action.

## APPENDIX D

The following are proposed Restrictive Covenants for property owned by Doe Run Resources Corporation (Doe Run) at the Leadwood Mine Tailings Site. These Covenants are not the final Restrictive Covenant for said property. The final Restrictive Covenants, once submitted by Doe Run and approved by EPA per the Unilateral Administrative Order (UAO), will be sent to Doe Run as stated in the UAO. It is the finalized, EPA approved Restrictive Covenants which Doe Run must file pursuant to the UAO.

### ENVIRONMENTAL PROTECTION DECLARATION OF RESTRICTIVE COVENANTS

This Environmental Protection Declaration of Restrictive Covenants is made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between the Doe Run Resources Company (Grantor), having an address of 1801 Park 270 Drive, St. Louis, Missouri, and **TO BE DETERMINED(Grantee)**, having an address of, **TO BE DETERMINED**.

#### WITNESSETH:

1. WHEREAS, Grantor is the owner of real property located in the county of St. Francois, State of Missouri, more particularly described in Exhibit A attached hereto and made a part hereof (the Property); and
2. WHEREAS, the Property is part of the Leadwood Superfund Site (Site), on which the United States Environmental Protection Agency (EPA), pursuant to 40 C.F.R. § 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), has instigated environmental cleanup actions; and
3. WHEREAS, in the Unilateral Administrative Order for Non-Time Critical Removal Action, In the Matter of Leadwood Superfund Site, EPA Docket No. CERCLA-07-2006-0272, dated September, 2006, the Grantee agreed to perform environmental cleanup actions on the Property, and the Grantor agreed to provide access to the Grantee and to the EPA, and to implement institutional controls, which include restrictive covenants and deed restrictions.
4. WHEREAS, the Grantor has agreed pursuant to the Unilateral Administrative Order (Order) to impose on the Property use restrictions as covenants that will run with the land for the purpose of protecting human health and the environment; and
5. WHEREAS, Grantor wishes to cooperate fully in the implementation of all environmental cleanup actions at the Site.

#### NOW, THEREFORE:

6. Grant: Grantor, on behalf of himself, his successors and assigns, in consideration of the terms of the Order, does hereby covenant and declare that the Property shall be subject to the

restrictions on use set forth below, and do give, grant, and convey to the Grantee, and its assigns, with general warranties of title the perpetual right to enforce said use restrictions.

7. Purpose: It is the purpose of this instrument to give to the Grantee the right to enforce use restrictions for the Property, as set forth in Paragraph 8 below, in order to ensure that the Property will be used only for purposes which are compatible with the environmental cleanup actions to be performed by the Grantee.

8. Restrictions on use: The following covenants, conditions, and restrictions apply to the use of the Property, run with the land and are binding on the Grantor, his successors, transferees, and assigns for the benefit of the Grantee and its successors, transferees, and assigns:

a. Unless approved in writing by the EPA or its assigns, the Property at the Site for any purpose that could reasonably be expected to attract children for significant periods of time, including, but not limited to, schools, playgrounds, parks, and picnic grounds; and

b. Unless approved in writing by the EPA or its assigns pursuant to Paragraph 10 herein, there shall be no disturbance of the surface or subsurface of the Property by filling, drilling, excavation, removal of topsoil, chat, tailings, rock or minerals, or change of topography in any manner.

9. Reserved rights of grantor: Grantor hereby reserves unto himself, his successors, and assigns, all rights and privileges in and to the use of the Property which are not incompatible with the restrictions, rights and covenants granted herein. This conveyance is expressly subject to restrictions, rights and covenants affecting the property hereby conveyed to the extent and only to the extent the same are valid and affect the property, and shall be considered as covenants running with the land and binding on all parties having any right, title or interest in the property, or any part thereof, their heirs, successors and assigns. Existing uses of the Property for commercial or industrial purposes have been found by the EPA to be compatible with the environmental cleanup action and are specifically permitted. Future uses of the Property for commercial or industrial purposes or residential purposes where children will not reside (e.g., senior, nursing or convalescent housing) would be compatible with the environmental cleanup action and are specifically permitted, provided that any activity on the Property that would disturb the surface or subsurface is approved by EPA pursuant to Paragraph 10.

10. Modification of restrictions: The restrictions on use set forth in Paragraph 8 above may be modified or terminated, in part or in whole, only upon written approval by the EPA or its assigns. If the Grantor or his successors in interest seek to modify or terminate the restrictive covenants, conditions, or restrictions, they may file a petition with the EPA setting forth the nature of the proposed change, the reasons therefore, and any expected impact of the changes on the response action, the public health, and the environment. If the proposed modification would involve disturbing the surface or subsurface of the Property, the petition shall set forth the procedures that will be followed to ensure that human health and the environment are adequately protected

during and after the activity, and the actions that will be taken to ensure that all mine waste is properly covered following completion of any activity which disturbs the cover. The Grantor may undertake the restricted use or activity only if the EPA or its assigns determine to allow such use or activity to be implemented pursuant to an approved plan.

11. Termination of Covenants: The covenants contained herein shall be deemed covenants running with the land, and shall remain in full force and effect upon conveyance of the property.

12. EPA Access Authority Unaffected: Nothing in this document shall limit or otherwise affect EPA's rights of entry and access or EPA's authority to take response actions under CERCLA, the National Contingency Plan, or other federal law.

13. No Public Access and Use: No right of access or use by the general public to any portion of the Property is conveyed by this instrument.

14. Notice requirement: Grantor agrees to include in any instrument conveying any interest in any portion of the Property, including but not limited to deeds, leases and mortgages, a notice which is in substantially the same form:

**NOTICE: THE INTEREST CONVEYED HEREBY IS SUBJECT TO ENVIRONMENTAL PROTECTION RESTRICTIVE COVENANTS, DATED \_\_\_\_\_, 20\_\_\_\_, RECORDED IN THE PUBLIC LAND RECORDS ON \_\_\_\_\_, 20\_\_\_\_, IN BOOK \_\_\_\_\_, PAGE \_\_\_\_\_, IN FAVOR OF, AND ENFORCEABLE, BY THE DOE RUN RESOURCES CORPORATION AND THE U.S. EPA.**

Within thirty (30) days of the date any such instrument of conveyance is executed, Grantor must provide Grantee with a certified true copy of said instrument and, if it has been recorded in the public land records, its recording reference.

15. Third Party Beneficiary: Grantor on behalf of himself and his heirs, successors, transferees, and assigns, and the Grantee, on behalf of itself and its successors, transferees, and assigns, hereby agrees that the EPA shall be a Third Party Beneficiary of all the benefits and rights conveyed to the Grantee under this instrument.

16. Enforcement: The Grantee and the Third Party Beneficiary shall be entitled to enforce the terms of this instrument by resort to specific performance or legal process. All remedies available hereunder shall be in addition to any and all other remedies at law or in equity, including CERCLA. Enforcement of the terms of this instrument shall be at the discretion of the Grantee and any forbearance, delay or omission to exercise its rights under this instrument in the event of a breach of any term of this instrument shall not be deemed to be a waiver by the Grantee of such term or of any subsequent breach of the same or any other term, or of any of the rights of the Grantee or Third Party Beneficiary under this instrument.

17. Damages: Grantee shall be entitled to recover damages for violations of the terms of this instrument, or for any injury to the remedial action, to the public or the environment protected by this instrument.

18. Waiver of certain defenses: Grantor on behalf of himself and his heirs, successors, transferees, and assigns hereby waive any defense of laches, estoppel, or prescription.

19. Covenants: Grantor hereby covenants to and with the Grantee and its assigns, that the Grantor is lawfully seized in fee simple of the property, that the Grantor has good and lawful right and power to sell and convey it or any interest therein, that the property is free and clear of encumbrances, except those noted on Exhibit B attached hereto, and that the Grantor will forever warrant to defend the title hereto and the quiet possession thereof.

20. Notices: Any notice, demand, request, consent, approval, or communication that either Grantor or Grantee or Third Party Beneficiary desires or is required to give shall be in writing and shall either be served personally or sent first class mail, postage prepaid, addressed as follows:

To Grantors:

The Doe Run Resources Corporation  
1801 Park 270 Drive, Suite 300  
St. Louis, Missouri 63146

To Grantee:

**TO BE DETERMINED**

To Third Party Beneficiary:

EPA Region VII  
Office of Regional Counsel  
United States Environmental Protection Agency  
901 N. 5<sup>th</sup> Street  
Kansas City, Kansas 66101

21. General Provisions:

a) Controlling law: the interpretation and performance of this instrument shall be governed by the laws of the United States or, if there are no applicable federal laws, by the law of

the state where the Property is located.

b) Liberal construction: Any general rule of construction to the contrary notwithstanding, this instrument shall be liberally construed in favor of the grant to effect the purpose of this instrument and the policy and purpose of CERCLA, 42 U.S.C. § 9601 et seq. If any provision of this instrument is found to be ambiguous, an interpretation consistent with the purpose of this instrument that would render the provision valid shall be favored over any interpretation that would render it invalid.

c) Severability: If any provision of this instrument, or the application of it to any person or circumstance, is found to be invalid, the remainder of the provisions of this instrument, or the application of such provisions to persons or circumstances other than those to which it is found to be invalid, as the case may be, shall not be affected thereby.

d) Entire Agreement: This instrument sets forth the entire agreement of the parties with respect to rights and restrictions created hereby, and supercedes all prior discussions, negotiations, understandings, or agreements relating thereto, all of which are merged herein.

e) No forfeiture: Nothing contained herein will result in a forfeiture or reversion of Grantors= title in any respect.

f) Joint Obligation: If there are two or more parties identified as Grantors herein, the obligations imposed by this instrument upon them shall be joint and several.

g) Successors: The covenants, terms, conditions, and restrictions of this instrument shall be binding upon, and inure to the benefit of, the parties hereto and their respective personal representatives, heirs, successors, and assigns and shall continue as a servitude running in perpetuity with the Property. The term Grantor, wherever used herein, and any pronouns used in place thereof, shall include the person and/or entity named at the beginning of this document, identified as the Grantor and his personal representatives, heirs, successors, and assigns. The term Grantee, wherever used herein, and any pronouns used in place thereof, shall include the persons and/or entities named at the beginning of this document, identified as the Grantee and its personal representatives, heirs, successors, and assigns. The rights of the Grantee and Grantor under this agreement are freely assignable, subject to the notice provisions hereof.

h) Termination of Rights and Obligations: A party's rights and obligations under this instrument terminate upon transfer of the party's interest in the Property, except that liability for acts or omissions occurring prior to transfer shall survive transfer.

IN WITNESS WHEREOF, Grantor has caused the Agreement to be signed in his name.



Executed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

By: \_\_\_\_\_

STATE OF \_\_\_\_\_ )  
 ) ss  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, before me, the undersigned, a Notary Public in and for the State of Missouri, duly commissioned and sworn, personally appeared \_\_\_\_\_, the Grantor that executed the foregoing instrument, and acknowledged the execution of this instrument to be the free and voluntary act of said Grantor, for the uses and purposes stated in this instrument, and on oath stated that they are authorized to execute this instrument.

Witness my hand and official seal hereto affixed the day and the year written above.

\_\_\_\_\_  
Notary Public in and for  
the State of Missouri

My Commission Expires: \_\_\_\_\_

EXHIBIT A of APPENDIX D  
LEGAL DESCRIPTION OF PROPERTY

PLEASE REFER TO ATTACHED DOCUMENTS

## This Indenture,

Made on the First day of March A. D. One Thousand  
Eight Hundred and Eighty three, by and between James East and Mary  
East his wife of the Township of Randolph  
and County of St. Francois & State of Missouri  
parties of the First Part, and The Saint Joseph Lead  
Company  
of the County of St. Francois in the State of Missouri party of the Second Part:

WITNESSETH, That the said parties of the First Part, in consideration of the sum of  
Sixteen Hundred (1600) 100 DOLLARS,  
to them paid by the said party of the Second Part, the receipt of which is hereby acknowledged, do, by these presents, GRANT,  
BARGAIN AND SELL, CONVEY AND CONFIRM, unto the said party of the Second Part, their successors  
Lots, Tracts or Parcels of Land, lying, being and situate in the County of Saint Francois and State of  
Missouri to wit: All Lot one (1) and south half of

Lot two (2) North east fourth of Section five (5)  
Township thirty six (36) Range four (4) east containing  
One Hundred and twenty (120) acres, the east half of south  
east fourth Sec five (5) Township thirty six (36) Range  
(4) east containing eighty acres (80), the north west fourth  
of South west fourth Section four (4) Township  
thirty six (36) Range four (4) east containing forty (40) acres  
also the south half of Lot one (1) north west fourth of  
Section four (4) Township thirty six (36) Range four (4) east  
containing sixty eight acres; the whole aggregating three  
hundred and eight (308) acres more or less.

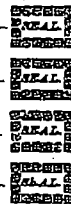
TO HAVE AND TO HOLD, The premises aforesaid, with all and singular the Rights, Privileges, Appurtenances and Immunities thereto  
belonging, or in anywise appertaining, unto the said party of the Second Part, and unto their successors  
said Parties of the first part  
hereby covenanting that they are lawfully seized of an Indefeasible Estate in fee, in the premises herein conveyed; that they  
have good right to convey the same; that the said premises are free and clear of any encumbrances done or suffered by them or  
those under whom they claim; and that they will Warrant and  
Defend the title to the said premises unto the said party of the Second Part, and unto their successors heirs and assigns FOREVER, against the  
lawful claims and demands of all persons whomsoever.

IN WITNESS WHEREOF, The said parties of the First Part have hereunto set their hand and seal the day and  
year first above written.

Signed, Sealed and Delivered in presence of us.

J. M. Kirkpatrick

James East  
by  
Mary Ann East  
mark



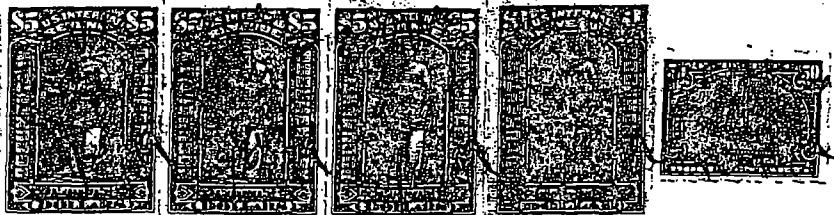
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Sec. 475 Mo.  
Acq'n  
Deal No. 5-7 Ref.

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This Indenture, Made on the 21<sup>st</sup> day of November  
 A. D. One Thousand Eight Hundred and Twenty Nine by and between  
E. C. McCormick and Lucy, his wife and  
J. E. McCormick  
 of St. Francois County, Missouri parties of the First Part, and  
the St. Joseph Lead Company, a corporation,  
 of the County of St. Francois, in the State of  
Missouri, part 4 of the Second Part:

Witnesseth, That the said parties of the First Part, in consideration of the sum of  
Sixteen Thousand Four Hundred and Eighteen <sup>20</sup>/<sub>100</sub> Dollars,  
 to them paid by the said part 4 of the Second Part, the receipt of which is hereby acknowledged, do by these  
 presents, Grant, Bargain and Sell, Convey and Confirm, unto the said part 4 of the Second Part its heirs and assigns,  
 the following described Lots, Tracts or Parcels of Land, lying, being and situate in the County of St. Francois  
 and State of Missouri to wit: All of the East part of Lot

Three (3) of the North East quarter of Section 5,  
 Township 36, Range 4 containing 61 <sup>1</sup>/<sub>2</sub> Acres  
 The North half of Lot 2 of said North East  
 quarter of said Section 5 containing 40 Acres  
 Also part of Lot 2 of the North West quarter of Section  
 4 of same Township and Range, described as follows:  
 Beginning on the Section line between said Sections 4 and  
 5, 24 <sup>1</sup>/<sub>2</sub> chains South of the Northwest corner of said  
 Section 4, running South on said line 13 <sup>1</sup>/<sub>2</sub> chains; thence  
 South 8 <sup>1</sup>/<sub>2</sub> East 20 <sup>1</sup>/<sub>2</sub> chains; thence North 31 East 15  
 chains; thence North 8 <sup>1</sup>/<sub>2</sub> West 10 <sup>1</sup>/<sub>2</sub> chains to the  
 beginning containing 8 <sup>3</sup>/<sub>4</sub> Acres and  
 aggregating 109 <sup>1</sup>/<sub>2</sub> Acres



To Have and to Hold the premises aforesaid, with all and singular the rights, privileges, appurtenances and  
 immunities thereto belonging or in anywise appertaining unto the said part 4 of the Second Part, and unto its heirs and  
 assigns, FOREVER, the said E. C. McCormick and Lucy his wife and  
J. E. McCormick hereby covenanting that they are lawfully seized of an  
 indefeasible Estate in Fee in the premises herein conveyed; that they have good right to convey the same; that the said  
 premises are free and clear of any incumbrances done or suffered by them or those under whom they claim  
 and that they will WARRANT AND DEFEND the title to the said premises unto the said part 4 of the Second Part, and  
 unto its heirs and assigns, FOREVER, against the lawful claims and demands of all persons whomsoever.

In Witness Whereof, the said parties of the First Part have hereunto set their hand the day and  
 year first above written.

Signed and delivered in the presence of us,

16.50

E. C. McCormick  
Lucy F. McCormick  
J. E. McCormick

State of Missouri,  
COUNTY OF St. Francois ss. On this 24th day of November 1899  
before me personally appeared E. C. McCormick  
and Lucy H. McCormick  
his wife, to me known to be the persons described in and who executed the foregoing instrument and acknowledged that they executed the same as their free act  
and deed.

In Testimony Whereof, I have hereunto set my hand and affixed my official seal at my office in  
Farmington the day and year first above written.  
My term expires June 19th 1903  
J. S. Clay,  
Notary Public.

State of Missouri,  
COUNTY OF St. Francois ss. On this 24th day of November 1899  
before me personally appeared J. E. McCormick  
to me known to be the person described in and who executed the foregoing instrument, and acknowledged that he executed the same as his  
free act and deed. And the said J. E. McCormick

further declares himself to be single and unmarried.

In Testimony Whereof, I have hereunto set my hand and affixed my official seal at my office in  
Farmington the day and year above written.  
My term expires June 19th 1903  
J. S. Clay,  
Notary Public.

General Warranty Deed.

16

J. E. McCormick &  
J. E. McCormick's wife  
Attorneys at Law

Filed for record this 19th day  
of December A. D. 1899  
at 10 o'clock 20 minutes A. M.  
J. E. McCormick  
Recorder.

Under this Deed the Taxes for next succeeding year and  
any outstanding lien for any local Assessment will fall on the  
GRANTOR, unless a clause to the contrary be inserted.

STANDARD FORM.

This Deed conforms precisely to the form of Printed War-  
ranty Deed Records prescribed by the STANFORD FARM-  
ERS Co., Hannibal, Mo., and now in use in many of the  
Counties of Missouri.

55-537.

RECORDER'S FEE.

100.00

STATE OF MISSOURI,  
County of St. Francois ss. In the Recorder's Office.  
I, J. O. Williams, Recorder of said County, do hereby certify that the within instrument of  
writing, was at 10 o'clock and 20 minutes A. M., on the 19th day of December A. D. 1899,  
duly filed for record in my office, and is recorded in the records of this office in Book 55 at page 537.

In Testimony Whereof, I have hereunto set my hand and affixed my official seal at  
Farmington this 20th day  
of December A. D. 1899.  
J. O. Williams RECORDER.  
By J. S. Clay, Deputy

## GENERAL WARRANTY DEED.

This Indenture, Made on the 27<sup>th</sup> day of November

A. D. One Thousand Eight Hundred and Twenty Nine by and between

E. E. Swink and Lillie Swink his wife,  
J. W. Beck and Pattie Beck his wife,  
Thomas H. Starn and John W. Tallock

\_\_\_\_\_ of the \_\_\_\_\_ of \_\_\_\_\_  
 the County of St. Francois and State of Missouri, parties

of the First Part, and St. Joseph Lead Company, a  
corporation,

\_\_\_\_\_ of the \_\_\_\_\_ of \_\_\_\_\_  
 the County of St. Francois and State of Missouri, part y  
 of the Second Part:

Witnesseth, That the said parties of the First Part, in consideration of the sum of  
Thirtyone Thousand Five Hundred and Seventy five  $\frac{17}{100}$  Dollars,  
 to them paid by the said part y of the Second Part, the receipt of which is hereby acknowledged, do by these presents, Grant,  
 Bargain and Sell, Convey and Confirm unto the said part y of the Second Part its successors  
 heirs and assigns, the following  
 described Lots, Tracts or Parcels of Land, lying, being and situate in the County of St. Francois and  
 State of Missouri, to wit: All of the South East Quarter

of Lot 2, of the North East Quarter containing 24.02  $\frac{3}{4}$   
acres; The North West Quarter of Lot 2, of the North  
East Quarter containing 34.02  $\frac{3}{4}$  acres, and all of  
that part of the North West Quarter lying north of  
that part of said Quarter now owned by the St. Joseph  
Lead Company except 8.38  $\frac{1}{2}$  acres conveyed by William  
Eaton to George H. Eaton Jr. containing 142.45  $\frac{1}{2}$   
acres all in Section four Township Thirty six, Range  
Four, and aggregating 210.51 acres.

Second party to pay all taxes on above lands  
 from and after this date.

TO HAVE AND TO HOLD the premises aforesaid with all and singular the rights, privileges, appurtenances and immunities thereto belonging or in anywise appertaining unto the said part 4 of the Second Part, and its successors and assigns, FOREVER, the said E. E. Swink, J. W. Buck, Thomas H. Starn and John H. Fullbrook

hereby covenanting that they are lawfully seized of an indefeasible Estate in Fee in the premises herein conveyed; that they have good right to convey the same; and that the said premises are free and clear of any incumbrances done or suffered by them or those under whom they claim, and that they will WARRANT AND DEFEND the title to the said premises unto the said party 4 of the Second Part, and unto its successors and assigns, FOREVER, against the lawful claims and demands of all persons whomsoever.

IN WITNESS WHEREOF, The said parties of the First Part have hereunto set their hands the day and year first above written.

Signed and delivered in presence of us,

E. E. Swink  
Lillie Swink

J. W. Buck  
Patrick F. Buck  
Thomas H. Starn  
J. H. Fullbrook



STATE OF MISSOURI,  
COUNTY OF St. Francois } SS.  
On this 28<sup>th</sup> day of November 1899  
before me personally appeared E. E. Swink and  
Lillie Swink his wife and  
J. W. Buck and Pattie E. Buck his wife

to me known to be the persons described in and who executed the foregoing instrument,  
and acknowledged that they executed the same as their free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at my office in  
Farmington the day and year first above written.

My term expires

Dec. 29<sup>th</sup> 1902

W. H. Fleming

Notary Public

STATE OF MISSOURI, } SS.  
COUNTY OF .....  
On this ..... day of ..... 18.....  
before me personally appeared .....

to me known to be the persons described in and who executed the foregoing instrument,  
and acknowledged that they executed the same as their free act and deed.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at my office in  
..... the day and year first above written.

My term expires.....

STATE OF MISSOURI,  
COUNTY OF St. Francois } SS.  
On this 28<sup>th</sup> day of November 1899  
before me personally appeared Thomas H. Starn and  
John W. Dillock  
to me known to be the person..... described in and who executed the foregoing instrument and acknowledged that they executed the same as their

free act and deed. And the said Thomas H. Starn and  
John W. Dillock further declare themselves to be single and unmarried.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in  
Farmington the day and year first above written.

My term expires

Dec. 29<sup>th</sup> 1902

W. H. Fleming

Notary Public

STATE OF MISSOURI, } SS.  
COUNTY OF .....  
On this ..... day of ..... 18.....  
before me personally appeared .....

STATE OF MISSOURI,  
COUNTY OF *St. Francois* } ss.

IN THE RECORDER'S OFFICE.

I, *J. C. Williams*, Recorder of said County, do hereby certify that the within instrument of writing, with the certificates thereon, was, on the *19* day of *December*, A. D. *1899*, at *10* o'clock and *20* minutes *A*. M., duly filed for record in this office, and is recorded in the Records of this office, in Book *55* at page *544*.

In WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at *Armington* this *23rd* day of *December*, A. D. *1899*.  
*J. C. Williams*  
*By J. H. Lee, Deputy -* RECORDER.

13

GENERAL WARRANTY DEED

FROM

*E. E. Swank, Chas.*

TO

*The St. Joseph Lead Co.*

Filed for Record this

*19th* day of *December*, A. D. *1899*

at *10* o'clock *A*. M.

*J. C. Williams*  
Recorder.

*55-544*

RECORDING FEE,

*1.00 Paid*

This deed should be recorded without delay, as a failure to record may seriously injure the title to the property.

This Indenture, Made on the Fourth day of August

A. D. One Thousand nine Hundred and — by and between

Dr. Charles Hoffman and Caroline Hoffman  
his wife.

of St. Francois County, Missouri part ies of the First Part, and

The St. Joseph Lead Company

of the County of St. Francois, in the State of  
Missouri, part y of the Second Part:

Witnesseth, That the said part ies of the First Part, in consideration of the sum of  
Forty Thousand XX  
— 100 Dollars,

to them paid by the said part y of the Second Part, the receipt of which is hereby acknowledged, do — by these

presents, Grant, Bargain and Sell, Convey and Confirm, unto the said part y of the Second Part its Successors and assigns,

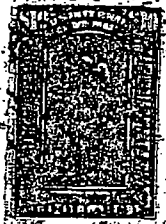
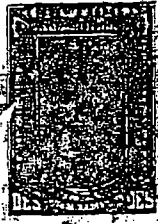
the following described Lots, Tracts or Parcels of Land, lying, being and situate in the County of St. Francois

and State of Missouri to wit: All of the East half of the

South West quarter and the Western half  
of the West half of the South East quarter  
of Section Four (4) Township Thirty-six (36)

North Range Four (4) East, containing  
One hundred and twenty (120) acres.

The parties of the First part however  
reserve to themselves, during the term of their  
natural lives, the privilege to use so  
much of the surface of the above premises  
as lies within the present enclosure,  
excepting so much thereof as may  
be required by the party of the Second  
part for mining and transportation  
purposes.



-To Have and to Hold the premises aforesaid, with all and singular the rights, privileges, appurtenances and  
immunities thereto belonging or in anywise appertaining unto the said part y of the Second Part, and unto its Successors

assigns, FOREVER, the said Dr. Charles Hoffman & Caroline Hoffman

his wife hereby covenanting that they are lawfully seized of an

indefeasible Estate in Fee in the premises herein conveyed; that they have good right to convey the same; that the said

premises are free and clear of any incumbrances done or suffered by them or those under whom they claim

and that they will WARRANT AND DEFEND the title to the said premises unto the said part y of the Second Part, and

unto its Successors and assigns, FOREVER, against the lawful claims and demands of all persons whomsoever.

In Witness Whereof, the said part ies of the First Part have hereunto set their hands the day and

year first above written.

Signed and delivered in the presence of us,

M. A. Livingston

Dr Charles Hoffman  
Caroline Hoffman

State of Missouri, }  
COUNTY OF St. Francois } ss.  
On this Fourth day of August, 1900.  
before me personally appeared Dr. Charles Hoffman  
and Caroline Hoffman  
his wife, to me known to be the persons described in and who executed the foregoing instrument and acknowledged that they executed the same as their free act and deed.

In Testimony Whereof, I have hereunto set my hand and affixed my official seal at my office in Bonnet Terre, Mo. the day and year first above written.  
My term expires January 30th, 1903.  
J. H. Helber  
Notary Public

State of Missouri, }  
COUNTY OF \_\_\_\_\_ } ss.  
On this \_\_\_\_\_ day of \_\_\_\_\_  
before me personally appeared \_\_\_\_\_  
to me known to be the person described in and who executed the foregoing instrument, and acknowledged that \_\_\_\_\_ executed the same as \_\_\_\_\_ free act and deed. And the said \_\_\_\_\_  
further declare \_\_\_\_\_ to be single and unmarried.  
In Testimony Whereof, I have hereunto set my hand and affixed my official seal at my office in \_\_\_\_\_ the day and year first above written.  
My term expires \_\_\_\_\_

General Warranty Deed.  
of Charles Hoffman  
to Caroline Hoffman  
TO  
St. Louis First Co.  
Filed for record this 11th day of August, A. D., 1900.  
at 8 o'clock 30 minutes 9 M.  
St. Louis  
Recorder.  
Under this deed the Taxes for next succeeding year and any outstanding lien for any local Assessment will fall on the grantor, unless a notice to the contrary be inserted.  
STANDARD FORM.  
This deed conforms precisely to the form of Principal Warranty Deed Records manufactured by the STANDARD PRINTING CO., St. Louis, Mo., and now in use in many of the Counties of Missouri.  
59-212  
Book 59-  
Page 212  
RECORDED FOR. 100

STATE OF MISSOURI,  
County of St. Francois } ss.  
In the Recorder's Office.  
I, J. H. Helber, Recorder of said County, do hereby certify that the within instrument of writing was, at 8 o'clock and 30 minutes 9 M., on the 11 day of August, A. D., 1900, duly filed for record in my office, and is recorded in the Records of this office, in Book 59 at page 212.  
In Witness Whereof, I have hereunto set my hand and affixed my official seal at St. Louis this 16 day of July, A. D., 1901.  
J. H. Helber  
Recorder

## GENERAL WARRANTY DEED.

BY A CORPORATION.

This Indenture, Made on the fourth day of January, A. D. One Thousand Nine Hundred and One, by and between Prospect Road Company,

a corporation of the State of Missouri, party of the First Part, and

St. Joseph Road Company, a corporation of the State of New York,

party of the Second Part:

WITNESSETH, That the said party of the First Part, in consideration of the sum of Forty Thousand (40,000) DOLLARS,

to it paid by the said party of the Second Part, the receipt of which is hereby acknowledged, does, by these presents, Grant Bargain and Sell, Convey and Confirm, unto the said party of the Second Part, ~~its successors and assigns~~ and assigns, the following described Lots, Tracts or Parcels of Land, lying, being and situate in the County of St. Francois and State of Missouri,

to wit: The East half of the West half of the southeast

quarter of Section four (4) in Township thirty six (36) North  
of Range four (4) East, in St. Francois County, in the State of  
Missouri, being forty (40) acres in all, save and except  
the right of way over a strip of ground fifteen (15) feet  
wide and forty (40) chains long off the East side of the  
East half of the West half of the southeast quarter of said  
Section four (4), Township thirty six (36), Range four (4) East,  
(the above described right of way over said strip of ground having  
been conveyed prior to the twelfth day of July, 1900, to the County  
of St. Francois for a public road), this conveyance being made  
subject to the conditions in the deed of June 25th, 1898, executed  
by Charles Hoffman to the said party of the first part, conveying  
said premises.

GENERAL WARRANTY DEED.  
BY A CORPORATION.

FROM  
*Prospect Lead Company*

TO  
*St. Joseph Lead Company*

Filed for Record this 12<sup>th</sup> day  
of January A. D. 1901  
at 10 o'clock 10 minutes of A. M.  
Per J. O. Williams Recorder  
Just Lee Deputy.  
57-591

RECORDER'S FEE, . \$ 1.00  
For this deed should be promptly recorded, as a failure to  
record may seriously impair the title to the property.

STATE OF Missouri  
COUNTY OF St. Francois } ss.

IN THE RECORDER'S OFFICE.

I, J. O. Williams, Recorder of said County, do hereby certify that the within  
instrument of writing was, on the 12<sup>th</sup> day of January A. D. 1901  
at 9 o'clock 10 minutes A. M. duly filed for record in this office, and is recorded in the records of this office,  
in book 57, at page 591

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official  
seal, at St. James, Missouri  
this 12<sup>th</sup> day of January A. D. 1901

J. O. Williams  
RECORDER  
By Just Lee Deputy.

THIS INDENTURE, Made on the 21<sup>st</sup> day of January, 1931, by and between FIRMIN V. DESLOGE, JOHN F. VALLE, FIRMIN D. FUSZ, EUGENE A. FUSZ, JOSEPH DESLOGE, and VINCENT P. RING, constituting the last President and Board of Directors of the Desloge Consolidated Lead Company (a Missouri corporation, which was dissolved on December 31, 1929), and the Statutory Trustees of said corporation, of the City of St. Louis, State of Missouri, parties of the First Part, and ST. JOSEPH LEAD COMPANY, a corporation organized under the laws of the State of New York, having its principal office in the City and State of New York, and duly authorized to do business in the State of Missouri, party of the Second Part, WITNESSETH:

THAT, WHEREAS, by deed dated June Twentieth, A. D. Nineteen Hundred and Twenty-nine, and recorded in the Office of the Recorder of Deeds of St. Francois County, Missouri, in Book 164, at page 137, the said Desloge Consolidated Lead Company conveyed to the said party of the Second Part certain lands and interests in lands in St. Francois County, described therein as being the lands or interests therein, acquired by said Desloge Consolidated Lead Company by certain deeds mentioned by parties, date, and place of recordation, and subject to certain exceptions therein similarly described; and,

WHEREAS, by contract between the said Desloge Consolidated Lead Company and said party of the Second Part dated June Seventh, A. D. Nineteen Hundred and Twenty-nine, the said Desloge Consolidated Lead Company agreed to give to the said party of the Second Part a deed or deeds describing said lands and interests therein with more definiteness and particularity, when requested:

NOW, THEREFORE, pursuant to, and in further performance of, said agreement, and to supplement the said prior deed hereinabove referred to, and to explain and make clear by positive description the lands and interests therein intended to be conveyed by said former deed, in all respects with the same effect as if the particular descriptions herein set forth had been, in the same terms, set forth in said former deed; and,

IN CONSIDERATION of the sum of One Dollar and other valuable considerations, receipt of which by the parties of the First Part from the party of the Second Part is hereby acknowledged, the parties of the First Part do by these presents GRANT, BARGAIN, EXCHANGE, CONVEY and CONFIRM unto the said party of the Second Part, its successors and assigns, forever, all of the following described lands and interests in lands situated in the County of St. Francois, in the State of Missouri, to-wit:

1. The Northwest fractional quarter of fractional Section 1, containing 31.72 acres, more or less; the East half of the Southwest quarter of Section 1, containing 80 acres, more or less; and the Northwest quarter of the Southwest quarter of Section 1: all in Township 36 North, Range 4 East;
2. The North half of the Southwest quarter of the Southwest quarter of Section 2, in Township 36 North, Range 4 East;
3. The Northeast quarter of the Southeast quarter of Section 3; the Northwest quarter of the Southeast quarter of Section 3; the South half of the Southeast quarter of Section 3: all in Township 36 North, Range 4 East;
4. All of the Southwest quarter of the Southwest quarter of Section 4, Township 36 North, Range 4 East;
- 5.\* All that part of the East half of the Southwest quarter and the West half of the Southeast quarter of Section 5, Township 36 North, Range 4 East, beginning at the Southwest corner of the East half of the Southwest quarter of said Section 5, running thence North one chain; thence North  $61^{\circ} 15'$  East 47.32 chains to the East line of the West half of the Southeast quarter of said Section 5; thence South along said East line to the South line of said Section 5; thence West along the South line of said Section 5 to the point of beginning, containing 48.49 acres, more or less.
6. The East half of the Northeast quarter and the East half of the Southeast quarter of Section 9, containing 160 acres, more or less; also, all that portion of the Northwest quarter of the Northeast quarter of Section 9, described as follows: Beginning at the Northwest corner of said 40 acres, running South 6.34 chains; thence East 19.86 chains to the East line of said 40 acres; thence North 6.34 chains to the Northeast corner of same; thence West 19.86 chains to the beginning, containing 12.58 acres; also, the South fractional part of the Northwest quarter of the Northeast quarter of Section 9, containing 27.42 acres; also, the Southwest quarter of the Northeast quarter of Section 9, containing 40 acres, more or less; also, the West half of the Southeast quarter of Section 9; also, the East half of the Southwest quarter of Section 9; also, the



Northeast quarter of the Northwest quarter, and the Southwest quarter of the Southwest quarter of Section 9, containing 80 acres, more or less; also, the Northwest quarter of the Southwest quarter, containing 40 acres, more or less; also, the West half of the Northwest quarter of Section 9, containing 80 acres, more or less; and, also, the Southeast quarter of the Northwest quarter of Section 9, containing 40 acres, more or less: all in Township 36 North, Range 4 East;

7. The Southwest quarter of the Southwest quarter of Section 10, containing 40 acres, more or less; the Northwest quarter of the Northeast quarter of Section 10; the West half of the Northeast quarter of the Northeast quarter of Section 10; the East half of the Southeast quarter and the Southeast quarter of the Northeast quarter, and the Southeast part of the West half of the Southeast quarter of Section 10, containing 135.50 acres, more or less: all in Township 36 North, Range 4 East;

8. The Southwest quarter of the Northwest quarter, and part of the Southwest quarter of the Southwest quarter of Section 11, containing 60 acres, more or less; also, the Southeast quarter of the Northwest quarter, and the Northeast quarter of the Southwest quarter of Section 11, containing 80 acres, more or less: all in Township 36 North, Range 4 East;

9.\* 80 acres being the North half of the Northeast quarter, 80 acres being the East half of the Northwest quarter, 40 acres being the Southwest quarter of the Northwest quarter, and 36 acres being part of the South half of the Northeast quarter, all in Section 15, aggregating 236 acres, more or less, excepting one acre reserved for a grave yard and on which there is now a family grave yard situated; also, the Northwest quarter of the Northwest quarter of Section 15, containing 40 acres, of which 5 acres are subject to the right of occupancy of Richard and Lucy Ann Stagdill, for their lives and for the live of the survivor of them, as provided in deed to John M. Desloge, recorded in Book 503, page 55: all in Township 36 North, Range 4 East;

10. All of the South half of the North half, and the North half of the Southwest quarter, of Section 16, containing 240 acres, more or less; all of the Northwest quarter of the Northwest quarter of Section 16; all of the Northeast quarter of the Northwest quarter of Section 16; all of the Northwest quarter of the Northeast quarter of Section 16; all of the Northeast quarter of the Northeast quarter of Section 16, excepting from the operation of this conveyance the surface rights to 5 acres in the Northeast corner of the Northeast quarter of the Northeast quarter conveyed for religious and educational purposes in 1865 by Edwin Harrison to Columbus Bean, et al; all the Southwest quarter of the Southwest quarter of Section 16, containing 40 acres, more or less: all in Township 36 North, Range 4 East;

11. The North end of the West fractional half of the Northwest fractional quarter of Section 21, Township 36 North, Range 4 East, containing 20 acres, more or less.

12. All of U. S. Survey No. 870, Townships 36 and 37 North, Range 4 East, containing 640 acres, more or less.

13. All the Northeast quarter of Section 8; the East half of the Northwest quarter of Section 8; the North half of the Northwest quarter of the Northwest quarter of Section 8; the Southwest quarter of the Southwest quarter of Section 8; the East half of the Southwest quarter of Section 8; all the South half of the Southeast quarter of Section 8; containing 80 acres, more or less; the Northwest quarter of the Southeast quarter of Section 8, containing 40 acres, more or less; all in Township 36 North, Range 4 East.

14. The mineral rights below one hundred feet of the surface in and to the Northeast quarter of the Southeast quarter of Section 8, Township 36 North, Range 4 East, containing 40 acres, more or less.

15. All or so much of the following described tract of land as lies on the West side of a small branch running through the same in a southerly course known as "Cabin de Course," to-wit: One hundred and Seventy-three acres and fifty-nine hundredths of an acre (173.59 acres) and situated in the Southwest portion of the Antoine Pratte Confirmation and bounded in the South by lands conveyed by John House to Conrad Norwine, on the West by lands entered by Alexander Sago, on the North by lands owned by Peter W. Murphy and the estate of George Vandiver, on the East by lands owned by Geo. W. Arman and Thos. Roan and the land hereby conveyed, containing 86.79 acres, more or less, being the same land conveyed to Eber C. Turley by Benona Turley and wife as described by their deed recorded in Book "R," at page 158, in the Recorder's Office of St. Francois County; reserving the right to ingress and egress to said spring of water therein described.

✓ 16. The South fractional half of Section 25, Township 37 North, Range 4 East, containing 9.54 acres, more or less.

✓ 17.\* Part of U. S. Survey 2164 containing 560 acres of land, being all of U. S. Survey No. 2164, in Township 37 North, Range 4 East, excepting 80 acres in the Southwest corner of said Survey on the West side of Big River.

✓ 18.\* 535 acres of land, being all that part of U. S. Survey No. 3176, in Townships 36 and 37 North, and Ranges 4 and 5 East, of the Fifth Principal Meridian, which remains after excluding from the original survey the interfering parts of the West one-half of the Southwest quarter, and the East one-half of the Northeast quarter of Section 35, and, also, the West one-half of the Northwest quarter of Section 36, in Township 37 North, Range 4 East. The original survey as confirmed to John

Ears, or his legal representatives, by Act of Congress of July 4, 1836, containing 640 acres, but the interfering portions of the Sections above described, containing about 105 acres, being excluded, left remaining in the said Survey the 535 acres, more or less, hereby conveyed.

19. All of the Northeast quarter (N.E. $\frac{1}{4}$ ) of the Southeast quarter (S.E. $\frac{1}{4}$ ) of Section twenty-two (22), and Southwest quarter (S.W. $\frac{1}{4}$ ) of Southwest quarter (S.W. $\frac{1}{4}$ ) of Section twenty-three (23); also fifteen (15) acres more or less, described as follows: beginning five and twenty-five hundredths (5.25) chains East of the Northeast corner of Southeast quarter (S.E. $\frac{1}{4}$ ) of Section twenty-two (22); thence West five and twenty-five hundredths (5.25) chains; thence South twenty-two (22) chains; thence East ten and fifty hundredths (10.50) chains; thence Northwest to beginning. All in Township thirty-seven (37) North, Range Four (4) East, known as the "Green land" and containing ninety-five (95) acres; all of the Northeast fractional quarter (N.E.frl. $\frac{1}{4}$ ) of Northwest fractional quarter (N.W.frl. $\frac{1}{4}$ ) of Section Twenty-six (26), in Township thirty-seven (37) North, Range four (4) East, containing twenty and ninety-two hundredths (20.92) acres, and known as the "Aubuchon Land;" all of the Southeast fractional quarter (S.E.frl. $\frac{1}{4}$ ) of the Southeast fractional quarter (S.E.frl. $\frac{1}{4}$ ) of Section twenty-three (23), Township Thirty-seven (37) North, Range Four (4) East, containing thirty-two and thirty hundredths (32.30) acres; the Southeast fractional quarter (S.E.frl. $\frac{1}{4}$ ) of Southwest fractional quarter (S.W.frl. $\frac{1}{4}$ ) and the Southwest fractional quarter (S.W.frl. $\frac{1}{4}$ ) of Southeast fractional quarter (S.E.frl. $\frac{1}{4}$ ) of Section Twenty-three (23), Township Thirty-seven (37) North, Range Four (4) East, containing fifty-nine and ninety-one hundredths (59.91) acres. Also a tract beginning at a point in North line of the Northwest quarter (N.W. $\frac{1}{4}$ ) of the Southwest quarter (S.W. $\frac{1}{4}$ ) of Section twenty-three (23), Township Thirty-seven (37) North, Range Four (4) East five and twenty-five hundredths (5.25) chains East of the Northwest corner of the Southwest quarter (S.W. $\frac{1}{4}$ ) of Section twenty-three (23), thence East along said North line fourteen and seventy-five hundredths (14.75) chains; thence South forty-five (45) degrees East thirty (30) chains; thence West twenty-nine and fifty hundredths (29.50) chains to a point in the South line of the Northwest quarter (N.W. $\frac{1}{4}$ ) of the Southwest quarter (S.W. $\frac{1}{4}$ ) of Section twenty-three (23), ten and fifty hundredths (10.50) chains East of the Southwest corner of the Northwest quarter (N.W. $\frac{1}{4}$ ) of the Southwest quarter (S.W. $\frac{1}{4}$ ) of Section twenty-three (23); thence in Northwest direction to beginning, containing forty-five (45) acres more or less, this tract being known as the "J. C. Williams Land," and aggregating one hundred and thirty-seven and twenty-one hundredths (137.21) acres, more or less. The mineral and mining rights on the Southeast quarter (S.E. $\frac{1}{4}$ ) of the Southeast quarter (S.E. $\frac{1}{4}$ ) of Section twenty-two (22) and the Northwest quarter (N.W. $\frac{1}{4}$ ) of the Northwest quarter (N.W. $\frac{1}{4}$ ) of Section twenty-six (26); and the Northeast quarter (N.E. $\frac{1}{4}$ ) of Northeast quarter (N.E. $\frac{1}{4}$ ) of Section twenty-seven (27), Township thirty-seven (37) North, Range four

(4) East, including all interest, right and estate in said lands reserved by the deed of Edwin Harrison and wife to James Chappell, which deed is recorded in the office of the Recorder of Deeds of St. Francois County, Missouri, and containing one hundred and twenty (120) acres.

20. The fractional part Southeast quarter of Section 26, Township 37 North, Range 4 East. Also the fractional part of Northeast quarter of Section 35, Township 37 North, Range 4 East. The center of Big River being the Western and Southern boundary of said above described tracts, and said tracts containing 20 acres, more or less.

21. The East fractional half of the Northwest quarter of Section 36, containing 35.07 acres, more or less; the West half of the Northwest quarter of Section 36, containing 80 acres, more or less; the Northeast fractional quarter of Section 36, containing 67.23 acres, more or less: all in Township 37 North, Range 4 East.

22. The Southwest part of U. S. Survey No. 80, Township 37 North, Range 5 East, described as follows: Beginning at a stone at the Southwest corner of said Survey No. 80, and running thence North 8° East, 710.5 feet to the middle of the main channel of Reeder Branch; thence in a Southeasterly direction, up and with the meandering of the main channel of said Reeder Branch, about 1170 feet to the Southern boundary line of said Survey No. 80; thence North 84° 15' West, with said Survey line 782.5 feet to the beginning, and containing 8.15 acres, excepting, however, the right-of-way of the M. R. & B. T. Railway, containing 1.52 acres. The amount of land hereby conveyed being 6.63 acres, more or less.

23. One acre of land described as follows: Beginning at the Southwest quarter section corner of Section 10, Township 37 North, Range 4 East, running East 4 chains to the East bank of Cabin de Course Creek; thence down the East Bank of said Creek to a post; thence West 2 chains to the West side of Section 10; thence South 4 chains to the beginning, containing 1 acre.

24. All that part of the East half of the Northeast quarter of Section 35, Township 37 North, Range 4 East, lying South of a line running along the center of Big River, containing 10 acres, more or less.

25. The North fractional half and the West half of the Southwest quarter of Section 6, Township 37 North, Range 5 East, containing 319.58 acres, more or less.

26. The following described tract or parcel of land lying, being and situate in St. Francois County, State of Missouri, to-wit: That part of U. S. Survey No. 2114, in Township 37 North, Range 5 East: Beginning at the Northwest corner of said Survey running South 82° East to channel of Big River; thence up Big River to the county road running from St. Joseph Lead Mines to French Village; thence along said road to the West line of said Survey; thence North 8° East

with said line to the point of beginning, and containing 6 acres, more or less.

27. All of the fractional Section 31, Township 37 North, Range 5 East, containing 21.97 acres, more or less, excepting therefrom one-fourth of an acre reserved as a burial lot by Catherine Reeder in deed by the said Catherine Reeder to the Desloge Consolidated Lead Company, recorded at page 548, of Book 41, of the records of St. Francois County, Missouri.

28. All of a certain part or parcel of land in U. S. Survey No. 2105 and in Township 37 North, Range 5 East, lying South of Big River, being a fractional part of a tract known as the William Estes tract, the lines of said fraction to begin on the South side of Big River where the South boundary of Survey No. 2105 originally crossed said river and running East with the said boundary line to the Southeast corner of said original Survey No. 2105; thence North with the Eastern boundary line of said Survey to the line dividing the William Estes and Ledford Estes tracts or to the Flat Branch that crosses said original line; thence with the divisional line Westward to the river. Said fraction to contain 30 acres, more or less, and being all of the William Estes tract that lies South of Big River, being the same land conveyed by Ellis G. Evans and wife to Levi Wells, less that part heretofore conveyed by Catherine Reeder to the M. R. & S. T. Railway Company.

29. All of that portion of U. S. Survey No. 2105, Township 37 North, Range 4 East, described as follows: Beginning at the Northwest corner of said Survey, running thence South  $83^{\circ}$  East 18.59 chains to a white oak; thence South  $27^{\circ}$  East 6.50 chains; thence South  $73^{\circ}$  West 6.78 chains; thence South  $27^{\circ}$  East about 2 chains to the Northeast corner of the Robert Lawson tract; thence South  $81^{\circ}$  West 10.18 chains to the East line of W. G. Milford tract; thence North  $27^{\circ}$  West to the beginning, containing 19.08 acres, less one acre heretofore conveyed by Robert Wood to E. T. Shaw by general warranty deed dated January 20, 1894, and recorded at page 563 of Book 43 of the records of the Office of Recorder of Deeds for St. Francois County, Missouri, being the same land heretofore conveyed by Robert Wood to Asbury Wood, by deed dated January 21, 1895, and filed for record September 21, 1897.

30. The Northwest part of Lot No. 11 of the Subdivision of U. S. Surveys Nos. 3092 and 1864, in Township 37 North, Range 5 East, a plat of which is recorded in the land records of St. Francois County, Missouri, in Book 28, at page 1, and contained within the following metes and bounds: Beginning at the Northwest corner of said Lot No. 11, and running thence East, on the Section line, 1303.7 feet to the middle of the public road leading from Desloge to Bonne Terre; thence South  $19^{\circ}$  15' West 411.7 feet; thence South  $54^{\circ}$  West 124.5 feet to a point in said Road; thence North  $62^{\circ}$  West 1219.4 feet to the Southeast corner of U. S. Survey No. 2105; thence North  $8^{\circ}$  East 311.0 feet to the beginning, and containing 12.10 acres, more or less,

excepting the surface right to the right-of-way of the M. R. & B. T. Railway, containing 0.96 of an acre.

31. The Southwest part of fractional Section 30, Township 37 North, Range 5 East, described as follows: Beginning at the Northwest corner of said fractional Section 30, it being the Southwest corner of U. S. Survey No. 80, and thence South  $84^{\circ} 15'$  East, with the Southern boundary line of said Survey No. 80, 1412.4 feet to the middle of the public road leading from Desloge to Bonne Terre; thence with the middle of said road, South  $6^{\circ}$  West 684.5 feet; thence South  $18^{\circ} 30'$  West 185.5 feet to the South boundary line of said Section 30; thence West on the Section line, 1403.7 feet to the Eastern boundary line of U. S. Survey No. 2105; thence North  $8^{\circ}$  East 990.0 feet to the beginning, containing 30.27 acres, more or less, excepting the surface right to the right-of-way of the M. R. & B. T. Railway, containing 2.27 acres.

32. All of Section 31, Township 38 North, Range 5 East, containing 594.17 acres, more or less.

33. A strip of land for right-of-way, to be used only for railway purposes, through part of fractional Section 35, Township 37 North, Range 4 East, and fractional Section 2, Township 36 North, Range 4 East, of the Fifth Principal Meridian, 100 feet wide being 50 feet on each side of the center line of Survey for railway from Desloge Shaft No. 4 to Desloge Shaft No. 5, commencing at Station 19 plus 85 of said Survey in the South line of U. S. Survey No. 3176, such point of beginning being 902 feet Eastwardly from the Southwest corner of said Survey; thence South  $58^{\circ} 45'$  West (Mag.), a distance of 692 feet; thence to left with curve of 955 feet radius, a distance of 799 feet; thence South  $10^{\circ} 50'$  West (Mag.), a distance of 123 feet; thence to left with curve of 819 feet radius, a distance of 842 feet; thence South  $48^{\circ} 7'$  West (Mag.), a distance of 380 feet; thence to right with curve of 410 feet radius, a distance of 597 feet; thence South  $35^{\circ} 38'$  West (Mag.), a distance of 261 feet; thence to right with curve of 717 feet radius, a distance of 385 feet; thence South  $66^{\circ} 28'$  West (Mag.), a distance of 108 feet; thence to left with curve of 717 feet radius, a distance of 491 feet; thence South  $27^{\circ} 13'$  West (Mag.), a distance of 920 feet; thence to left with curve of 2865 feet radius, a distance of 190 feet to the South line of the Northwest quarter of the Southwest quarter of Section 2, Township 36 North, Range 4 East, at a point 193 feet East from a stone at the Southwest corner of the Northwest quarter of the Southwest quarter of said Section 2, containing 13.31 acres, more or less; subject to crossing rights reserved to M. R. & B. T. Railway Company.

34. A strip of land for right-of-way, to be used only for railway purposes, through the Northwest quarter of Section 10, Township 36 North, Range 4 East, of the Fifth Principal Meridian, being

100 feet wide, or 50 feet on each side of the center line of Survey for railway from Desloge Shaft No. 4 to Desloge Shaft No. 5, commencing at Station 119 plus 12 of the Survey of said Railway in the East line of said Northwest quarter of said Section 10, such point of beginning being 1067 feet South of the Northeast corner of said Northwest quarter; thence to the left with curve of 1433 feet radius, a distance of 78 feet; thence South  $79^{\circ} 48'$  West (Mag.), a distance of 44 feet; thence to the left with a curve of 574 feet radius, a distance of 549 feet; thence South  $24^{\circ} 52'$  West (Mag.), a distance of 118 feet; thence to the right with a curve of 717 feet radius, a distance of 615 feet; thence South  $74^{\circ} 2'$  West (Mag.), a distance of 1537 feet to the West line of said Section 10, such point being 2128 feet South of a stone at the Northwest corner of said Section 10, containing 6.76 acres, more or less; subject to crossing rights reserved to the M. R. & B. T. Railway Company;

35. A strip of land for right-of-way, to be used for switching purposes only, beginning at a point on the line between Surveys No. 3092 and 870, Township 37 North, Range 5 East, at the intersection of said Survey line with the Western boundary line of the M. R. & B. T. Railway, 100 feet of right-of-way South of the Northeast corner of Survey No. 870, thence South  $7-1/2^{\circ}$  West with the line between Surveys No. 3092 and 870 for a distance of 425 feet; thence South  $82-1/2^{\circ}$  East 220 feet to the Western boundary line of the M. R. & B. T. Railway right-of-way; thence in a Northwesterly direction with the line of said right-of-way 480 feet to the place of beginning, containing 1 acre and  $7/100$  of an acre;

excepting, however, from this conveyance, the surface rights to the following described lots, tracts, or parcels of land, which surface rights were conveyed by the said Desloge Consolidated Lead Company, to-wit:

(a) A strip of land 100 ft. in width, deeded for right-of-way to M. R. & B. T. Railway Company, running over and through the Northeast corner of U. S. Survey No. 870, and more particularly described as follows, to-wit: Beginning at Station 210 plus 98 of said Railroad, and running thence to Station 211 plus 03 of said Railroad, containing  $8/100$  of an acre, as shown by the map and profile of said Railway on file in the Office of the Clerk of the County Court of said County of St. Francois.

(b) The following described lot or parcel of land lying and situate in the said County of St. Francois, to-wit: Lot 1 and part of Lot 2 in Block 22, having together a frontage of 100

feet on First Street by a depth of 120 feet to an alley on the Southeast corner of First and Boggy Streets, as laid down in the town plat of Desloge, Missouri.

(c) Starting at the Southeast corner of U. S. Survey No. 870, run North  $7^{\circ} 30'$  East along and with the Easterly line of said Survey, a distance of 900 ft.; thence run Westwardly from said point and at a right angle to the said Easterly line of said Survey, a distance of 25 ft. to a point which is the beginning corner, and also the Northeast corner of the following described tract of land, to-wit: from said beginning corner run South  $7^{\circ} 30'$  West on a line parallel with the Easterly line of said U. S. Survey No. 870, a distance of 200 ft.; thence run Westwardly at a right angle with the line last aforesaid 277 ft. to a point; thence run North  $7^{\circ} 30'$  East at a right angle with the line last aforesaid and parallel with the Easterly line of said U. S. Survey No. 870, a distance of 200 ft.; thence at a right angle with the last described line run Eastwardly 277 ft. to the beginning corner of said tract, and being its Northeast corner as aforesaid; said tract hereby described containing  $1\frac{1}{2}$  acres, more or less.

(d) Starting at the Southeast corner of U. S. Survey No. 870, run North  $7^{\circ} 30'$  East along and with the Easterly line of said Survey, a distance of 700 ft.; thence run Westwardly from said point and at a right angle to said Easterly line of said Survey, a distance of 25 ft. to a point which is the beginning corner and also the Northeast corner of the following described tract of land, to-wit: from said beginning corner run South  $7^{\circ} 30'$  West on a line parallel with the Easterly line of said U. S. Survey No. 870, a distance of 200 ft.; thence run Westwardly at a right angle with the line last aforesaid 277 ft. to a point; thence run North  $7^{\circ} 30'$  East at a right angle with the line last aforesaid and parallel with the Easterly line of said U. S. Survey No. 870, a distance of 200 ft.; thence at a right angle with the last described line run Eastwardly 277 ft. to the beginning corner of said tract, and being its Northeast corner as aforesaid, said tract containing  $1\frac{1}{2}$  acres, more or less.

(e) Lots 13, 14, 15 and 16, being 300 ft. front by 140 ft. depth, to-wit: Beginning on the Southeast corner of the county road, otherwise called Marquette Street, running Southwardly 300 ft. along Fifth Street to Lot No. 12 along Lot No. 15 Eastwardly by 140 ft. to a proposed alley, and Northwardly to Marquette Street; thence Westwardly to the point of beginning and being in Block 26 of the Addition to the Town of Desloge, Missouri, and indicated on the plat showing the Addition to said Desloge, Missouri.

(f) A strip of land for right-of-way for a power line for the transmission of electric power and stringing of wires on poles 20 ft. on, over, across and through the South part of the



West half of the Northeast quarter of the Northeast quarter of Section 10, in Township 36 North, Range 4 East; this said strip beginning on the Eastern boundary line of said West half of the Northeast quarter of the Northeast quarter, a distance of about 100 ft. North of the Southeast corner thereof and running West along a blazed line to and near the public road near the Southeast corner of said tract; thence in a Southwardly direction to the Mitchell Shaft in the Southwest quarter of the Northeast quarter of said Section 10.

(g) A strip of land for right-of-way through the Southwest quarter of the Northeast quarter of Section 11, Township 36 North, Range 4 East, of the Fifth Principal Meridian, being 100 ft. wide or 50 ft. on each side of the center line of the survey from Gumbo Branch of the M. R. & B. T. Railway to the Mitchell Shaft in the Southwest quarter of the Northeast quarter of Section 10, Township 36 North, Range 4 East, commencing at Station 34 plus 38 of said Survey in the North line of said tract of land and 38 ft. West on said line from the Northeast corner of said Southwest quarter of the Northwest quarter of said Section 11; running thence South  $35^{\circ} 20'$  West (Magnetic) 1555 ft. to Station 49 plus 93 of said Survey; thence by curve to right having a radius of 717 ft., a distance of 277 ft. to the South line of said Southwest quarter of the Northwest quarter, a distance of 163 ft. East from the Southwest corner of said 40 acre tract, containing 4.21 acres, more or less, and also a strip of land for right-of-way from the Northeast quarter of the Southeast quarter and the Southeast quarter of the Northeast quarter, section 10, Township 36 North, Range 4 East, of the Fifth Principal Meridian, 100 ft. wide or 50 ft. on each side of the Survey from the Gumbo Branch of the M. R. & B. T. Railway to the Mitchell Shaft in the Southwest quarter of the Northeast quarter of Section 10, Township 36 North, Range 4 East, commencing at Station 64 plus 38 in the East line of said Northeast quarter of the Southeast quarter of said Section 10, and which point is 69 ft. South of the Northeast corner thereof; running thence by curve to right having a radius of 717 ft., a distance of 370 ft. to Station 58 plus 08 of said Survey; thence North  $79^{\circ} 27'$  West (Mag.), a distance of 714 ft. to the West boundary line of said Southeast quarter of the Northeast quarter of said Section 10, containing 3.29 acres, more or less.

(h) Lot 1 and part of Lot 2 in Block 22 having together a frontage of 125 ft. on First Street by a depth of 120 ft. to an alley as laid down on the plat of Desloge, Missouri.

(i) Lot 8, Block 20, 75 x 140 ft. deep in the town of Desloge, County of St. Francois, Missouri, on the Northwest corner of Third and Nine a Joe Street as per plat of said town. The above described Lot to be used for the erection thereon of a Greek Catholic Church, pastoral residence and school purposes of aforesaid religious denomination only, upon conditions set forth in deed re-

corded in Book 60, page 426, of the Records of said St. Francois County;

(j) Beginning at a point 900 ft. Northerly from the Southeast corner of Survey No. 870 in said Survey line and 25 ft. Westwardly at right angles to said Survey line; thence South  $70^{\circ} 30''$  West, a distance of 200 ft.; thence at right angles with said Survey line 277 ft.; thence parallel with said Survey line 200 ft.; thence at right angles with said Survey line 277 ft. to the place of beginning, containing  $1\frac{1}{2}$  acres, more or less, to be used for burial purposes only.

(k) Lot 7, Block 20, fronting 75 ft. on Third Street by a depth of 140 ft. as laid down on the town plat of Desloge, Missouri. The above described lot joins a lot upon which stands the Greek Catholic Church. The purpose for which the lot is to be used is for pastoral residence to said Church and no other purpose, upon conditions set forth in deed recorded in Book 60, page 533, of the records of said St. Francois County.

(l) Start at the Northeast corner of U. S. Survey No. 870 and run thence South  $7\frac{1}{2}^{\circ}$  West 680 ft.; run thence at right angles Westwardly, a distance of 352.3 ft. to the Southeast corner of said Lot 12 for a point of beginning; thence Northwardly along the West line of Second Street 300 ft.; thence at right angles Westwardly 300 ft. to East line of Third Street; thence Southwardly along the East line of Third Street 300 ft. to Boggy Street, being the Southwest corner of said Block 12; thence Eastwardly along the line of Boggy Street 300 ft. to the place of beginning.

(m) Lots 1 and 2 in Block 20 of Desloge, Missouri, as shown on the plat of Desloge town made by the Desloge Consolidated Lead Co., said lots having each a frontage of 75 ft. on Third Street and 143 ft. on Boggy Streets, being the Northeast corner of Third and Boggy Streets in U. S. Survey No. 870 with a frame building on said premises.

(n) The right to erect and maintain poles, wires, etc., over that portion of Randolph Township consisting of Lots 11/22 and Blocks 29 and 30, the same being bounded on the North by Depot Street, on the South by Mine a Joe Street, on the West by Eighth Street and on the East by First Street.

(o) The surface rights only of a tract of land beginning at a point on the North line of Lot 11, bearing South  $82^{\circ} 30'$  East 1265.5 ft. from the Northwest corner of said Lot 11 in U. S. Survey 3092, Township 36 North, Range 5 East of the Fifth Principal Meridian; thence North  $60^{\circ} 41'$  East, a distance of 145 ft. to a point 40 ft. to the left of Station 5 plus 90; thence North  $29^{\circ} 19'$  West for a distance of 60 ft. to a point, said point being 100 ft. to left of Station 5 plus 90; thence North  $60^{\circ} 41'$  East for a distance of 20 ft. to a point; thence South  $29^{\circ} 19'$  East for a distance of 60 ft. to a point, said point being

40 ft. to the left of Station 6 plus 10; thence North 60° 41' East for a distance of 33 ft. to a point in the center of county road; thence bearing South 21° and 30' West for a distance of 120 ft., more or less, to the Southwest corner of the Sallie Highley tract, said point being on the North line of Lot 11 of U. S. Survey 3092, St. Francois County, Missouri; thence North 82° 30' West on the North line of said Lot 11, 65 ft. to Station #5 on the center line of Route 32, Missouri State Highway; thence continuing North 82° 30' West on said line of Lot 11, 68 ft. to a point of beginning, all being situate in U. S. Survey 3092, Township 36 North, Range 5 East, of the Fifth Principal Meridian, St. Francois County, Missouri, containing in all 0.179 acres, more or less, said surface rights having been conveyed by the Desloge Consolidated Lead Company by right-of-way deed recorded in Book 161, at page 550, of the Records of St. Francois County, Missouri.

(p) Lot 1, Block 13, as shown on the town plat of Desloge, St. Francois County, Missouri.

But it is intended to hereby convey to the party of the Second Part, its successors and assigns, forever, not only the complete title to the lands and interests hereinabove described; subject only to said surface rights, but also all of the title, rights and remedies of the Desloge Consolidated Lead Company and/or of the above parties of the First Part as against the respective owners of said surface rights.

TO HAVE AND TO HOLD the premises aforesaid, with all and singular the rights, privileges, appurtenances, immunities, and improvements thereunto belonging, or in any wise appertaining unto, the said party of the Second Part, and unto its successors and assigns, forever.

IN WITNESS WHEREOF, the said parties of the First Part have hereunto set their hands the day and year first above written.

William J. Desloge  
John A. Davis  
William D. Desloge  
Eugene A. Desloge  
Joseph L. Desloge  
Vincent P. Desloge

Statutory Trustees of Desloge Consolidated Lead Company, a dissolved corporation.

STATE OF MISSOURI)  
                                  )SS.  
CITY OF ST. LOUIS)

On this, the 21<sup>st</sup> day of January, 1931, before me personally appeared FIRMIN V. DESLOGE, JOHN P. VALLE, FIRMIN D. FUSZ, EUGENE A. FUSZ, JOSEPH DESLOGE, and VINCENT P. RING, to me known to be the persons described in and who executed the foregoing instrument, and acknowledged that they executed the same as their free act and deed, as Statutory Trustees of the Desloge Consolidated Lead Company, a dissolved corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal in the City and State aforesaid.

My term expires


September 1, 1931.

Olga S. Nichl  
Notary Public.

STATE OF MISSOURI,        )  
                              ) ss.     IN THE RECORDER'S OFFICE.  
County of St. Francois. )

I, H. H. McCarty, Recorder of Deeds, within and for said County and State, do hereby certify that the above and foregoing instrument of writing, with the certificate thereon was, on the 20th day of February 1931, at 2 o'clock 00 minutes P. M., duly filed for record in this office and that the same is duly recorded in said office in Book 165 on 482 to 494, both numbers inclusive.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of my said office. Done at office in Farmington, Missouri, this the 21st day of February 1931.

 Recorder.  
By \_\_\_\_\_ Deputy.

288-2/65-482

8-199

FILED FOR RECORD

2-10-65

FEB 20 1965

W. H. McLean

RECORDED & INDEXED

1/20/65